

Medworth Energy from Waste Combined Heat and Power Facility

PINS ref. EN010110
Document Reference: Vol 7.5
Revision 1.0
June 2022



Design and Access Statement

Regulation reference: The Infrastructure
Planning (Applications: Prescribed Forms
and Procedure) Regulations 2009
Regulation 5(2)q

**We inspire
with energy.**



Medworth Energy from Waste Combined Heat and Power Facility



Executive summary

This Design and Access Statement (DAS) forms part of a suite of documents being submitted to support the DCO process. The purpose of the Design and Access Statement is to explain how the EfW CHP Facility component of the Proposed Development is a suitable response to the site and its setting, and to demonstrate that it can be adequately accessed by prospective users. The Statement also summarises the approach taken to the design of the Walsoken Substation and concludes with a number of design principles for these components of the Proposed Development.

The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year, this process would take place within the EfW CHP facility which would generate over 50 megawatts of electricity which would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate via a CHP Connection. The Applicant, Medworth CHP Ltd is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies which is one of Germany's leading energy companies.

National policy contained within NPS EN-1 establishes the criteria for good design for energy infrastructure and requires that the Secretary of State consider whether a design is sustainable and as attractive, durable and adaptable as it can be, with the applicant taking into account both functionality and aesthetics as far as is possible.

This DAS demonstrates how the Applicant has considered the historic development of the area including and surrounding the site of the EfW CHP Facility and how it has considered the existing building types and forms and how they provide a context for design. It also explains some of the potential future opportunities which the Applicant has considered, such as carbon capture and a reopened railway and how these have influenced the siting of buildings and patterns of movement within the EfW CHP Facility Site.

The design process which has informed EfW CHP Facility is explained. Beginning with masterplanning it explains how different roofscapes were considered and the reasons why the preferred choice was selected. Similarly, the different approaches to cladding the buildings are explained with reference to precedent both locally and on other EfW Facility in the UK. Informed by non statutory and statutory consultation further iterations are described and reasons given for the choice made such that the DAS then presents the final elevations, layout, access and landscaping arrangements and commits the buildings to achieve BREEAM 'Good'.

A similar process to that explained for the EfW CHP Facility is followed to arrive at a design for the administration building. Sited at the visitor entrance to the EfW CHP Facility Site this building combines its administration role with one which is designed to welcome visitors and to demonstrate the Applicant's commitments to sustainable development. The administration building would be BREEAM Excellent and would incorporate features such as a green wall, brown roof, solar panels and rainwater recycling for example.

The functional requirements of the Walsoken Substation have been the main influence upon its design. However, the Applicant has chosen to use clean air insulated switchgear which is consistent with national policy and which would be less visible than the other policy compliant alternative. By taking access from the existing UKPN access, vegetation loss is minimised.

The design process explained within the DAS has informed the identification of design principles which will be applied to ensure that the final detailed design is consistent with the design submitted with the application. The design principles cover matters such as elevational materials and colours, sustainable features such as green walls and brown roofs and the minimisation of unnecessary signage for example.



Contents

Executive summary	3	Design development	21	Appendix A	54
Introduction and site location	5	Design Development pre-statutory consultation	22	Design principles	
Background	5	Scale, Massing and Roof Profile	22	EfW CHP Facility	54
The Applicant and the project team	6	Precedents	23	Administration building	55
Purpose of the Design and Access Statement	7	Statutory consultation	25	Walsoken substation	55
Other relevant policy and guidance	7	Design Development post statutory consultation	26		
		Design quality	27		
The proposed development	9	Positioning of over-cladding	28		
Overview of The Proposed Development	9	Sustainability and education (The EfW CHP Facility including the administration building)	30		
Building and landscape context	13	Sustainable design	31		
		The Walsoken Substation	32		
Involvement and evaluation	16	Landscape and ecology	33		
Design Process	17	3rd Party Certification	35		
Design Consultation	17	Summary	35		
Concept Masterplan	18	Other design matters	36		
PEIR Masterplan	19	The Proposed Design	37		
Finalise Masterplan	20	Rochdale envelope	38		
		EfW CHP Facility Layout	45		
		EfW CHP Facility access to strategic road network	46		
		Design and access conclusion	53		



Introduction and site location

Background

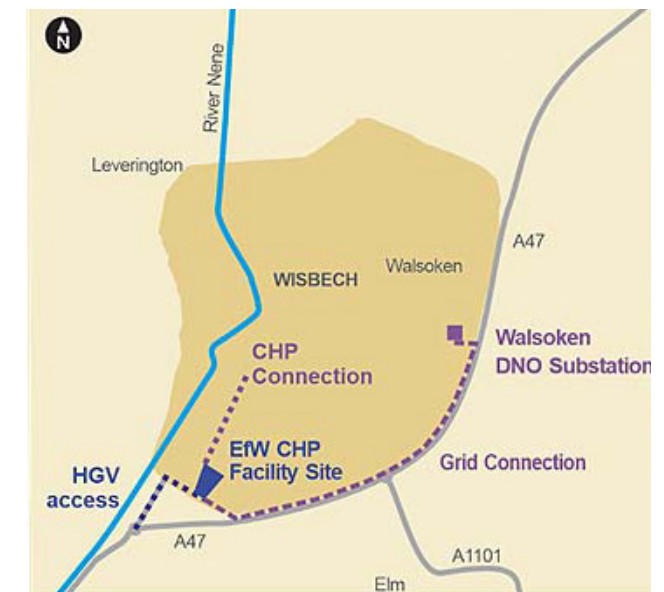
Medworth CHP Limited (the Applicant) is applying to the Secretary of State (SoS) for a Development Consent Order (DCO) to construct, operate and maintain an Energy from Waste (EfW) Combined Heat and Power (CHP) Facility on the industrial estate, Algores Way, Wisbech, Cambridgeshire. Together with associated Grid Connection, CHP Connection, Water Connections, and Temporary Construction Compound (TCC), these works are the Proposed Development.

The Proposed Development would recover useful energy in the form of electricity and steam from over half a million tonnes of non-recyclable (residual), non-hazardous municipal, commercial and industrial waste each year. The Proposed Development has a generating capacity of over 50 megawatts and the electricity would be exported to the grid. The Proposed Development would also have the capability to export steam and electricity to users on the surrounding industrial estate.

The Proposed Development is a Nationally Significant Infrastructure Project (NSIP) under Part 3 Section 14 of the Planning Act 2008 (2008 Act) by virtue of the fact that the generating station is located in England and has a generating capacity of over 50 megawatts (section 15(2) of the 2008 Act). It, therefore, requires an application for a DCO to be submitted to the SoS via the Planning Inspectorate (PINS) under the 2008 Act. The Examining Authority appointed by the SoS will examine the application for the Proposed Development and make a recommendation to the SoS for Business, Energy and Industrial Strategy (BEIS) to grant or refuse consent. On receipt of the report and recommendation from the Examining Authority, the SoS will then make the decision on whether to grant the Medworth EfW CHP Facility DCO.

This Design and Access Statement summarises the context of Proposed Development but focuses on the design evolution of the EfW CHP Facility, the key building component together with the administration building and Walsoken Substation. Other aspects of the Proposed Development's design evolution such as the Grid Connection, CHP Connection, Water Connections, Access Improvements and location of the TCC are considered in **ES Chapter 2 Alternatives (Volume 6.2)**.

Graphic 1 Site location





The Applicant and the project team

The Applicant is a wholly owned subsidiary of MVV Environment Limited (MVV). MVV is part of the MVV Energie AG group of companies. MVV Energie AG is one of Germany's leading energy companies, employing approximately 6,500 people with assets of around €5 billion and annual sales of around €4.1 billion. The Proposed Development represents an investment of approximately £450m.

The company has over 50-years' experience in constructing, operating, and maintaining EfW CHP facilities in Germany and the UK. MVV Energie's portfolio includes a 700,000 tonnes per annum residual EfW CHP facility in Mannheim, Germany.

MVV Energie has a growth strategy to be carbon neutral by 2040 and thereafter carbon negative, i.e., climate positive. Specifically, MVV Energie intends to:

- Reduce its direct carbon dioxide (CO₂) emissions by over 80% by 2030 compared to 2018;
- Reduce its indirect CO₂ emissions by 82% compared to 2018;
- Be climate neutral by 2040; and
- Be climate positive from 2040.

MVV's UK business retains the overall group ethos of 'belonging' to the communities it serves whilst benefitting from over 50 years' experience gained by its German sister companies.

MVV's largest project in the UK is the Devonport EfW CHP Facility in Plymouth. Since 2015, this modern and efficient facility has been using around 265,000 tonnes of municipal, commercial and industrial residual waste per year to generate electricity and heat, notably for Her Majesty's Naval Base Devonport in Plymouth, and exporting electricity to the grid.

In Dundee, MVV has taken over the existing Baldovie EfW Facility and has developed a new, modern facility alongside the existing facility. Operating from 2021, it uses up to 220,000 tonnes of municipal, commercial and industrial waste each year as fuel for the generation of usable energy.

Biomass is another key focus of MVV's activities in the UK market. The biomass power plant at Ridham Dock, Kent, uses up to 195,000 tonnes of waste and non-recyclable wood per year to generate green electricity and is capable of exporting heat.

To prepare the Environmental Statement (ES) for the Proposed Development, the Applicant has engaged Wood Group UK Limited (Wood). Wood is registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme.



Purpose of the Design and Access Statement

Legislative framework

The legislative framework for Design and Access Statements (DAS) is set out at Part 3, s.9 of the Town and Country Planning (Development Management Procedure) (England) Order 2015.

A DAS is not required for a DCO application submitted under the Planning Act 2008; however, the Applicant has chosen to prepare one to explain the design choices made and to demonstrate that the Proposed Development represents sustainable, good design. This DAS illustrates the design evolution decisions taken for the Proposed Development focusing upon the EFW CHP Facility.

National Policy Statement EN-1

The Overarching National Policy Statement for Energy EN-1 ('NPS EN-1') establishes the criteria for good design for energy infrastructure. At section 4.5.1, it states:

"The visual appearance of a building is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations. The functionality of an object — be it a building or other type of infrastructure — including fitness for purpose and sustainability, is equally important. Applying "good design" to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible. It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area".

Section 4.5.3 states the SoS:

"...needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including taking account of natural hazards such as flooding) as they can be... should satisfy itself that the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible. Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation..."

Other relevant policy and guidance

In addition to EN-1, design policy and guidance that should be considered in the design of major infrastructure projects include:

- Design Principles for National Infrastructure (National Infrastructure Commission Design Group, 2020);
- A Design Led Approach to Infrastructure (UK Design Council (formerly Commission for Architecture and the Built Environment), 2012.

The first and most recent of these documents establishes four design principles for national infrastructure which are:

- Mitigate greenhouse gas emissions and adapt to climate change;
- Reflect what society wants and share benefits widely;
- Provide a sense of identity and improve our environment; and
- Achieve multiple benefits and solve problems well.



The following policy and guidance documents have also informed the approach to design. A description of these documents and relevant policy can be found within the **Planning Statement (Volume 7.1)**:

- Overarching National Policy Statement for Energy (EN-1);
- National Policy Statement for Renewable Energy Infrastructure (EN-3);
- National Policy Statement for Electricity Networks Infrastructure (EN-5);
- Draft Overarching National Policy Statement for Energy (EN-1) September 2021;
- Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) September 2021;
- Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) 2021;
- National Planning Policy Framework (NPPF);
- NPPF National Design Guide;
- Cambridgeshire and Peterborough Minerals and Waste Local Plan (July 2021);
- Cambridgeshire and Peterborough Minerals and Waste Local Plan, The Location and Design of Waste Management Facilities (July 2021);
- Norfolk County Council Core Strategy and Minerals and Waste Development Management Policies;
- Waste Site Specific Allocations Development Plan Document;
- Fenland Local Plan; and
- King's Lynn and West Norfolk Borough Council Core Strategy.

Table 1 Design Principles for the EfW CHP Facility Site

Design Principles	Page number
Attractive and responsive to the setting (including building and landscape design, responsiveness to existing character and landform).	12 - 15 18 - 24 27 - 31 33 - 34 36 - 53
Durable and adaptable (allowing flexibility to change over time including taking into account the potential impacts of climate change).	19 - 20 30 - 31
Functionality and fit for purpose (facilitating safe and effective access and operation, and using best possible technological solution).	18 - 20
Alternative options considered (leading to an informed selection of the most appropriate solution, including engagement undertaken to develop and identify the solution).	17 - 34

The proposed development

Overview of The Proposed Development

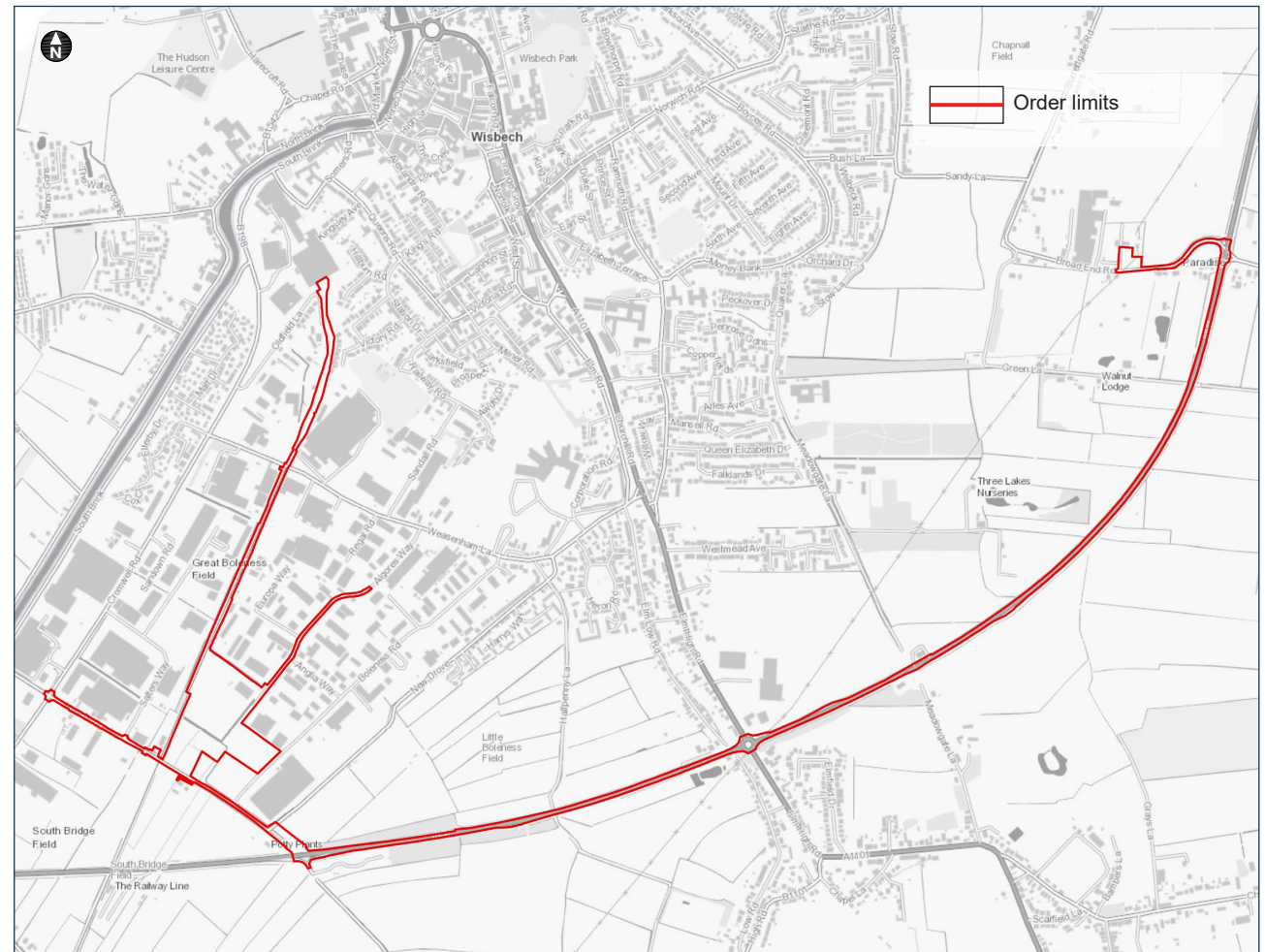
Whilst the DAS focuses on the EfW CHP Facility Site, The Proposed Development comprises the following key elements:

- The EfW CHP Facility;
- CHP Connection;
- Temporary Construction Compound (TCC);
- Access Improvements;
- Water Connections; and
- Grid Connection.

A summary description of each proposed development element is provided below. A more detailed description is provided in **ES Chapter 3: Description of The Proposed Development (Volume 6.2)**. A list of terms and abbreviations can be found in **Chapter 1 Introduction, Appendix 1F Terms and abbreviations (Volume 6.4)**.

EfW CHP Facility Site: A site of approximately 5.3ha located south-west of Wisbech, located within the administrative areas of Fenland District Council and Cambridgeshire County Council. The main buildings of the EfW CHP Facility would be located in the area to the north of the Hundred of Wisbech Internal Drainage Board (HWIDB) drain bisecting the site and would house many development elements including the tipping hall, waste bunkers, boiler house, turbine hall, air cooled condenser, air pollution control building, chimneys and administration building. The gatehouse, weighbridges, 132kV switching compound and laydown maintenance area would be located in the southern section of the EfW CHP Facility Site.

Graphic 2 Order limits of the Proposed Development



© Crown Copyright and database rights 2021 OS 100004458.



CHP Connection: The EfW CHP Facility would be designed to allow the export of steam and electricity from the facility to surrounding business users via dedicated pipelines and private wire cables located along the disused March to Wisbech Railway. The pipeline and cables would be located on a raised, steel structure.

TCC: Located adjacent to the EfW CHP Facility Site, the compound would be used to support the construction of the Proposed Development. The compound would be in place for the duration of construction.

Access Improvements: includes access improvements on New Bridge Lane (road widening and site access) and Algores Way (relocation of site access 20m to the south).

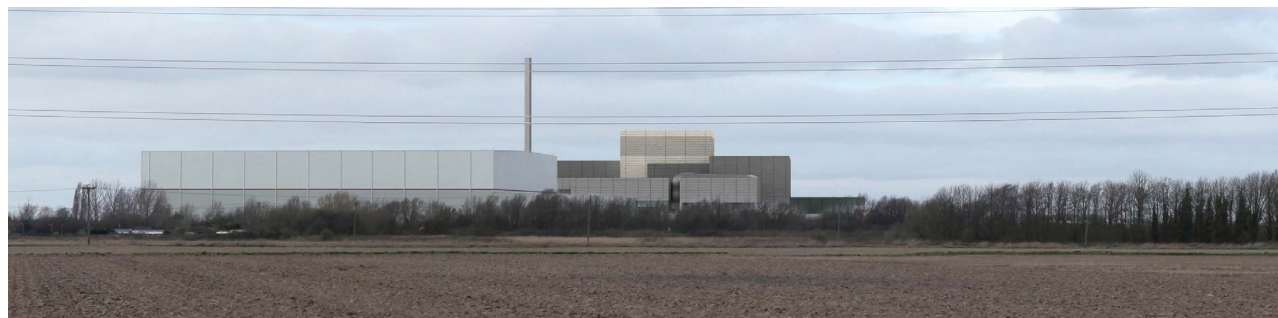
Water Connections: A new water main connecting the EfW CHP Facility into the local network will run underground from the EfW CHP Facility Site along New Bridge Lane before crossing underneath the A47 (open cut trenching or horizontal directional drilling (HDD)) to join an existing Anglian Water main. An additional foul sewer connection is required to an existing pumping station operated by Anglian Water located to the northeast of the Algores Way site entrance and into the EfW CHP Facility Site.

Grid Connection: This comprises a 132kV electrical connection using underground cables. The Grid Connection route begins at the 132kV switching compound in the EfW CHP Facility Site and runs underneath New Bridge Lane, before heading north within the verge of the A47 to the Walsoken Substation on Broadend Road. From this point the cable would be connected underground to the Walsoken DNO Substation.

The key components of the EfW CHP facility are summarised on **Graphic 3**.



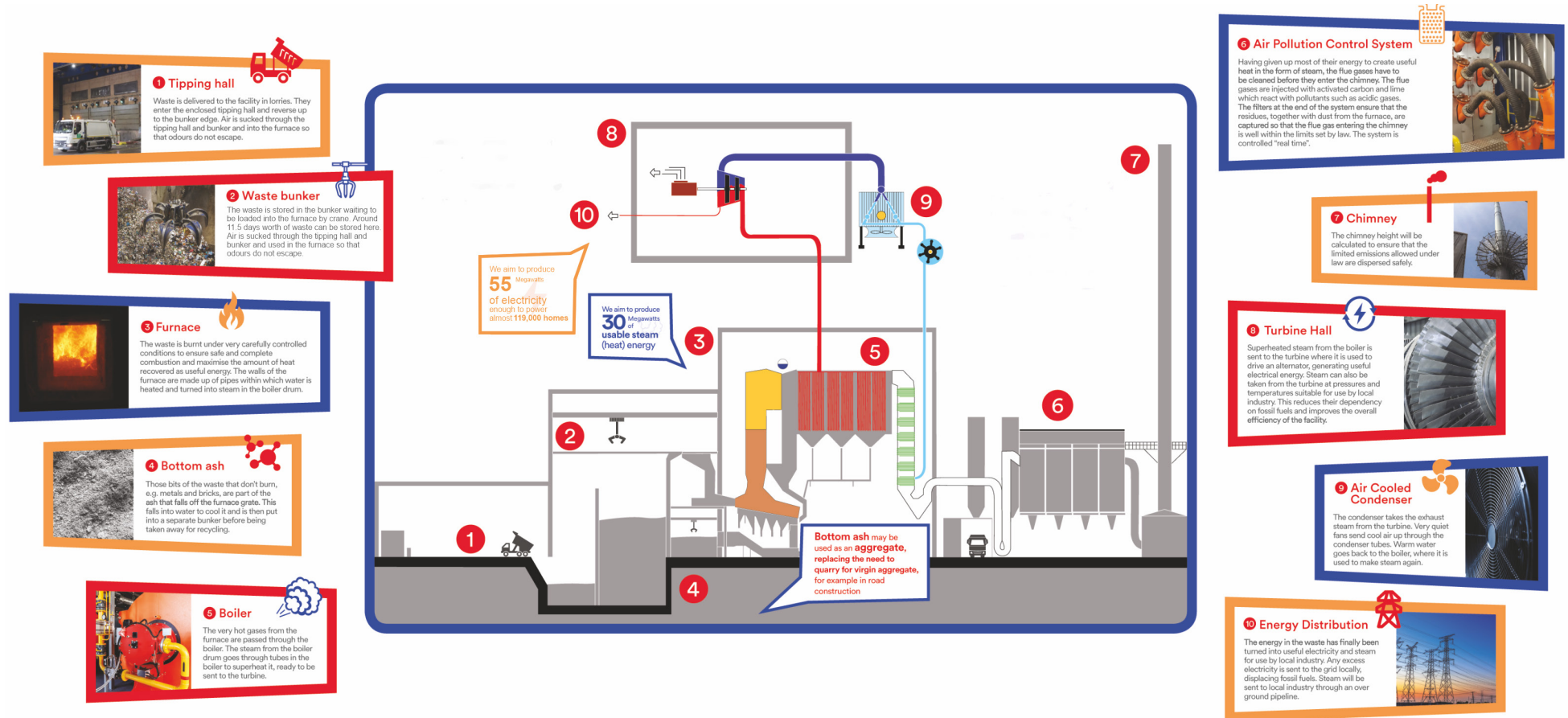
Photograph looking towards the cold store building



Photomontage of proposed EfW CHP Facility looking towards the cold store building



Graphic 3 EfW CHP Facility process schematic

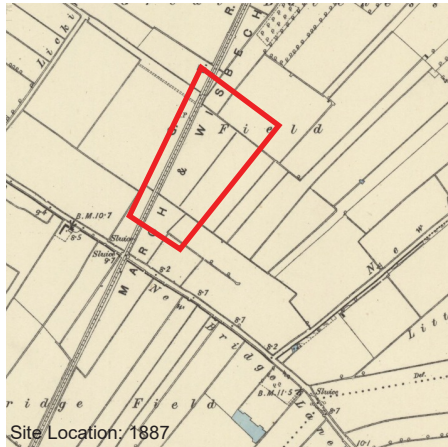




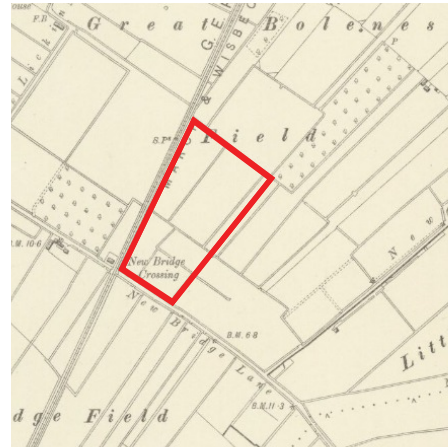
Historic Context for the EFW CHP Facility Site

Historical maps and recent aerial photography reveal the gradual encroachment of the industrial area into the adjoining fenland landscape and most recently the development of the nearby cold store and other large industrial buildings which characterise the immediate site context.

Maps and Aerial images illustrating the development of the industrial estate



Site Location: 1887



Site Location: 1903



Site Location: 1933



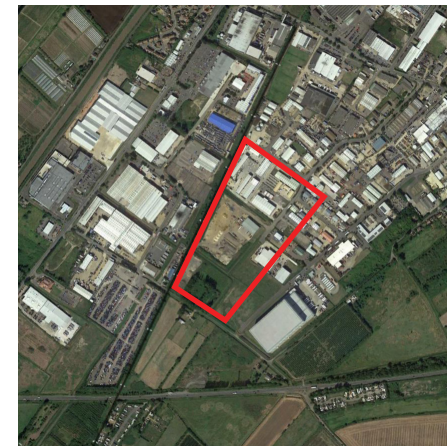
Site Location: 1953



Site Location: 1999



Site Location: 2003



Site Location: 2016



Site Location: 2021



Building and landscape context

The EfW CHP Facility Site is bounded to the west, north and east by an established industrial estate, which comprises of single and two storey brick and metal clad buildings. The exception to this is the cold store building (Partner Logistics, DFDS) to the south east (adjacent to viewpoint 1 on site analysis plan) which is approximately 33m in height and clad in grey composite metal cladding.

The buildings have varied construction and detailing, predominantly with shallow pitched or flat roofs, and profiled cladding. Eaves, verge, and flashing details are typically pressed metal and finished to match the cladding colour.

Further to the west of the site, the commercial buildings and associated landscaping are of higher quality design than the adjacent industrial estate, reflecting their function as generally relatively more 'public' focussed uses. The building forms have varied mono pitch roofs, timber cladding and curtain glazing, with simple square section eaves and overhangs to create focal entrances and promote wayfinding. The landscape design is a combination of low maintenance and durable species, organised around tarmac and herringbone patterned block paved hard landscaping.

The EfW CHP Facility Site

The site is tightly defined by the disused March to Wisbech Railway which forms the western site boundary and by New Bridge Lane, to the south. Both immediately to the north, east and within the middle of the site the existing HWIDB drains are present. The drains restrict available space as there is a requirement to maintain a landscaped strip to enable access for maintenance.

The southern part of the EfW CHP Facility Site adjacent to New Bridge Lane is a mixture of hardstanding, material stockpiles and an area of poplar trees planted in lines that run parallel and at right angles to New Bridge Lane.



1. Partner Logistics, DFDS



2. James Mackle (UK) Ltd Food Supplier



3. Maha UK Manufacturer



4. Ford and DAF



5. Ironworks Gym



6. Jack Richards and Sons



7. DHL



8. Tesco from South Brink



9. Tesco from Cromwell Road



10. Knowles Transport Storage Logistics



11. Wisbech Retail Park



12. Wisbech Retail Park



View A from New Bridge Lane



View B from the retail park

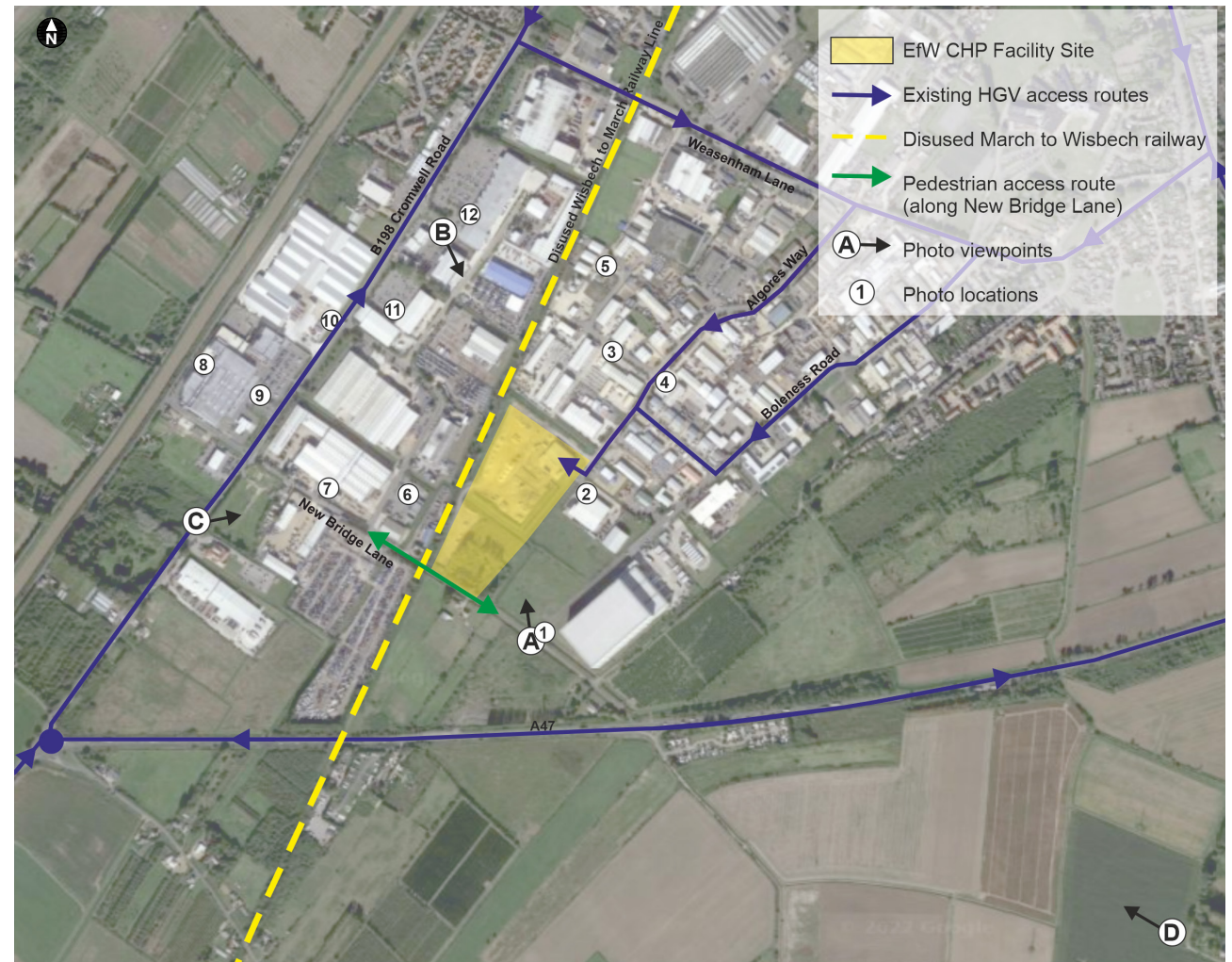


View C from Cromwell Road



View D from A47

Graphic 4 EfW CHP Facility viewpoints and existing access routes





Access

The EfW CHP Facility Site is located to the south of Wisbech on an existing industrial estate and adjacent plot of undeveloped land located to the east. The EfW CHP Facility Site is bounded by two highways, New Bridge Lane to the south and Algores Way to the north-east. The EfW CHP Facility Site is currently accessed via an existing surfaced access from Algores Way. To reach the existing site entrance, traffic is required to route along Algores Way from Weasenham Lane. From Weasenham Lane site traffic can access the A47 strategic road by either routing east to the A1101 Elm High Road, joining the A47 at the A1101/A47 junction, or by routing west to the B198 Cromwell Road, joining the A47 at the B198/A47 junction. Algores Way is only an adopted highway from the junction with Weasenham Lane to the frontage of 19 Algores Way. A footway is provided along the length of Algores Way.

The southern boundary of the EfW CHP Facility Site is adjacent to New Bridge Lane; a single-track road that runs from Cromwell Road to a terminus point near the A47. The road is currently closed at the point at which it crosses the disused March to Wisbech Railway over land owned by Network Rail. The road is at grade across the railway line and closed effectively by the placement of stone blocks though non-motorised users can still cross the railway line.

March to Wisbech Railway

The reopening of the disused March to Wisbech Railway is a proposal being explored by Network Rail and CPCA with the support of CCC and FDC. Although there are currently no confirmed and funded plans for the reopening of the disused railway, the layout of the EfW CHP Facility Site should be designed so that the Proposed Development would not prevent the reopening of the March to Wisbech Railway see **ES Chapter 3 Description of the Proposed Development (Volume 6.2)** for further details.

Carbon Capture

There is currently no legal or policy requirement for the EfW CHP Facility to include Carbon Capture and Storage (CCS) apparatus or to be Carbon-Capture Ready (CCR). The Proposed Development does not therefore include the construction and operation of any carbon capture technology. However, the matter of carbon capture at EfW facilities is under review by the Government, see **ES Chapter 3 Description of the Proposed Development (Volume 6.2)** for further details. Therefore, the design for the EfW CHP Facility Site, should be adaptable to the potential need to install carbon capture technology in future.

The Environmental Act 2021 was enacted in November 2021 and this, together with emerging Government policy in the form of the Consultation Draft National Policy Statements for Energy, indicate that Nationally Significant Infrastructure Projects will be required to meet biodiversity objectives which are yet to be set. See **ES Chapter 3 Description of the Proposed Development (Volume 6.2)** for further details. However, in light of these provisions and emerging policy, the current layout of the Proposed Development therefore should provide areas of land which will be landscaped to create habitats that will contribute towards biodiversity net gain.

Involvement and evaluation

Graphic 5 Halfpenny Way Byway north of A47





Design Process

Overview of the design process

The design process can be split into two key stages, summarised on the flow diagram below. Stage 1 – the pre-submission stage. This includes all tasks from initial concept design, consultation with Stakeholders and finalisation for DCO submission. Stage 2 – the post consent stage. Having established the design principles and secured DCO approval, preparation of the detailed design drawings with the EPC Contractor.

The DAS summarises the activities undertaken during Stage 1 and considers the following key design principles, which together will feed into the overall ‘good design’ of a project.

Attractive and responsive to the setting – including building and landscape design.

Durable and adaptable– allowing flexibility to change over time including taking into account the potential impacts of climate change.

Functionality and fit for purpose – facilitating safe and effective access and operation, and using best possible technological solution.

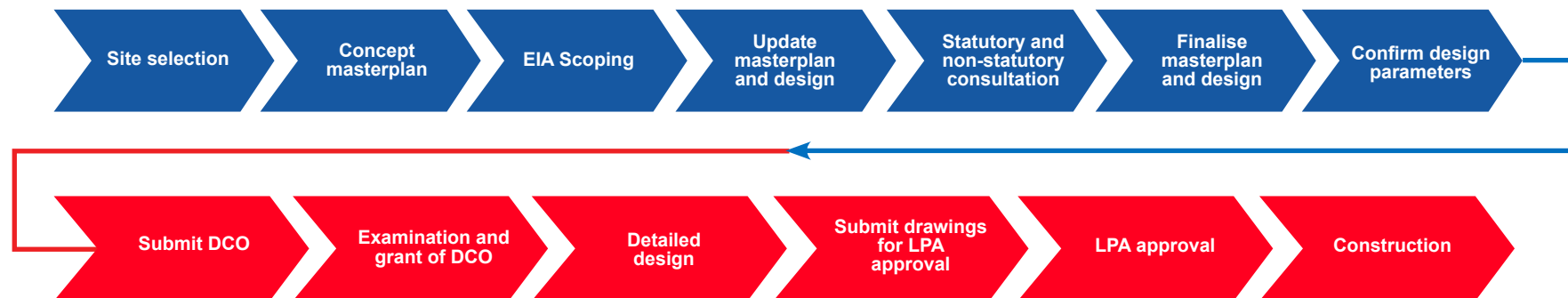
Alternative options considered – leading to an informed selection of the most appropriate solution, including engagement undertaken to develop and identify the solution.

Design Consultation

Design consultation has been an iterative process, with preliminary designs responding to baseline information sourced from technical and environmental surveys further informed through feedback received from non-statutory and statutory consultation. A summary of the stakeholders involved in the process and technical surveys undertaken are identified below:

- The Applicant’s technical team;
- Ecological survey;
- Landscape and visual survey;
- Arboricultural site survey;
- Desktop land quality assessment and Ground Investigation;
- Utilities survey and sub-site mapping exercise;
- Topographical survey;
- Engagement with stakeholders; and
- Responses received to statutory and non-statutory consultation.

For the purposes of the DAS the following sections cover how the masterplanning and design development has responded to the technical and environmental information received and to the comments provided at the various stages of consultation.





Concept Masterplan

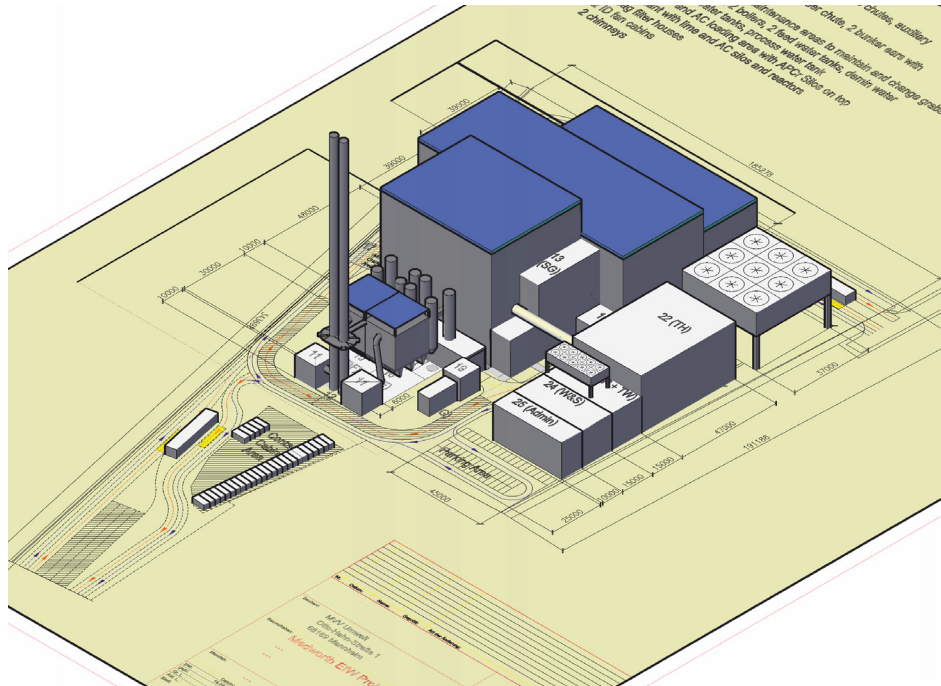


Introduction

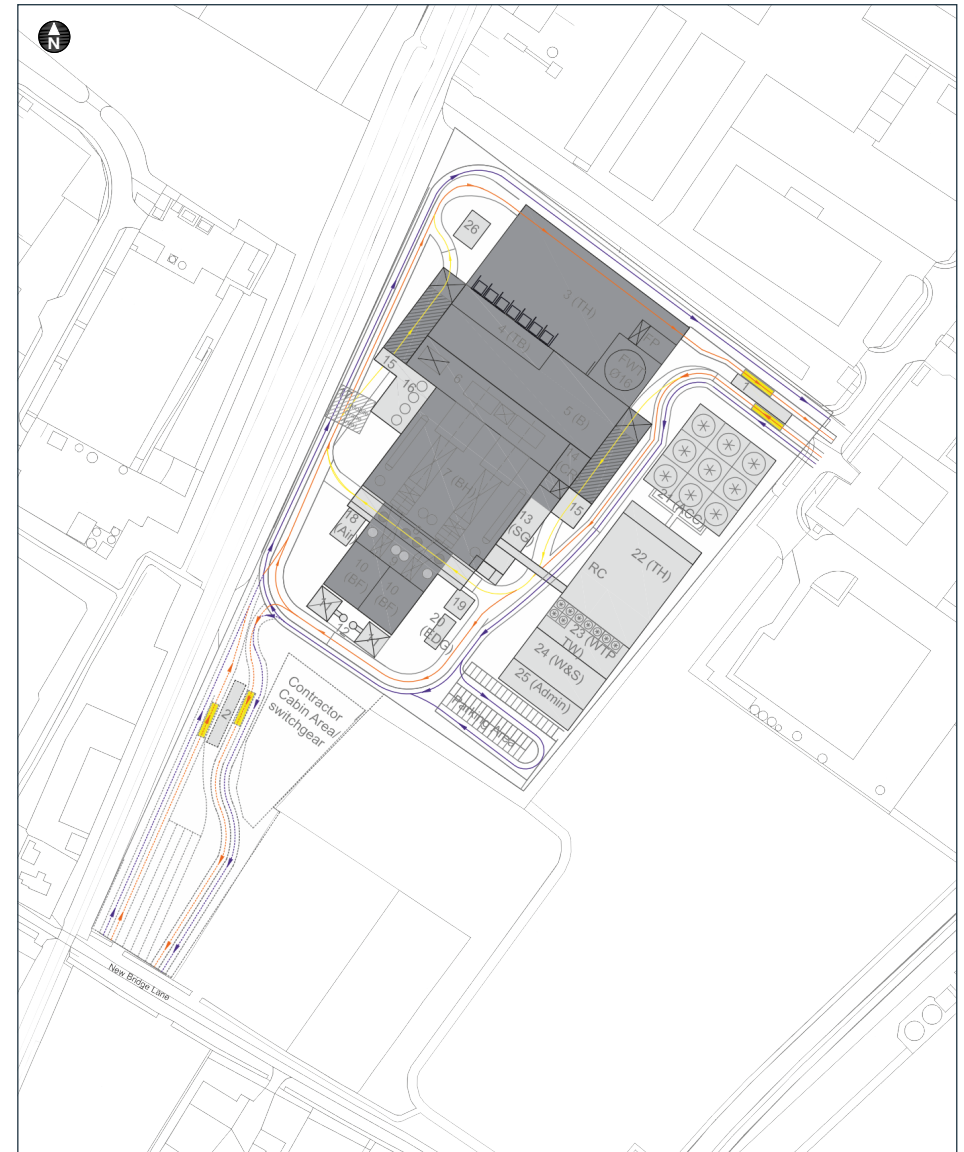
Once a suitable site had been identified using the Applicant's essential and preferable site selection criteria, see **ES Chapter 2 Alternatives (Volume 6.2)**, an initial concept masterplan was prepared by the technical and development teams at MVV.

The concept masterplan reviewed building orientations, reversing these along the north-south axis, maintaining the existing Waste Transfer Station (WTS) vehicle entrance off Algores Way and accommodating a new access point from New Bridge Lane. Process equipment was positioned away from the closest residential receptors on New Bridge Lane.

The concept masterplan confirmed the EfW CHP Facility could be accommodated within the footprint of the existing Waste Transfer Station (WTS).



Graphic 6 Concept masterplan



© Crown Copyright and database rights 2021 OS 100004458.

PEIR Masterplan

On receipt of PINS EIA Scoping Opinion, the Applicant began to review, assess feedback, and undertake further consultation with Stakeholders.

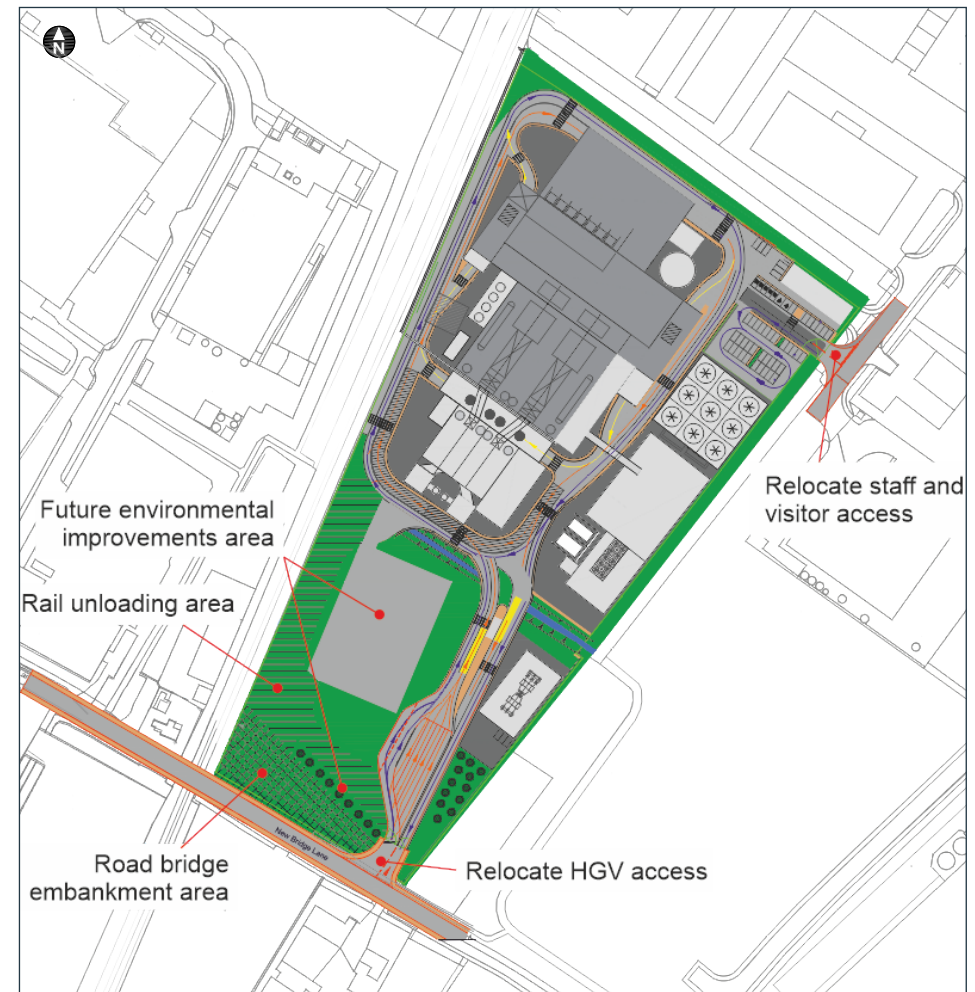
There were four key factors which influenced the next stage of the development of the design. Further details are provided in **ES Chapter 2 Alternatives (Volume 6.2)**, in summary these were:

- The Wisbech Access Strategy (WAS) – should proposals come forward to open adjacent land for development, the Proposed Development should ensure compatibility with the New Bridge Road Access Improvements proposals;
- Proposed reopening of the disused March to Wisbech Railway – safeguard land for a potential future embankment for a road bridge over New Bridge Lane and land for a rail unloading area i.e., deliveries of residual waste by rail. Consequently, the New Bride Lane HGV entrance was moved east.
- Consideration of the potential environmental impacts of the use of Algores Way for access – relocate but retain access onto Algores Way for a segregated staff and visitor access only. HGV access via New Bridge Lane only; and
- Ensuring that the Proposed Development can deliver future legal and/or policy requirements relating to carbon capture and storage and biodiversity net gain – land identified for future environmental improvements.

Other design considerations included:

- To allow access for maintenance, accommodate 6m standoffs from Internal Drainage Board (IDB) ditches;
- To improve safety, relocating the administration building and staff and visitor car park adjacent to the Algores Way entrance; and
- For perimeter inspections, addition of a pedestrian bridge over IDB ditch.

Graphic 7 PEIR masterplan



© Crown Copyright and database rights 2021 OS 100004458.

Finalise Masterplan

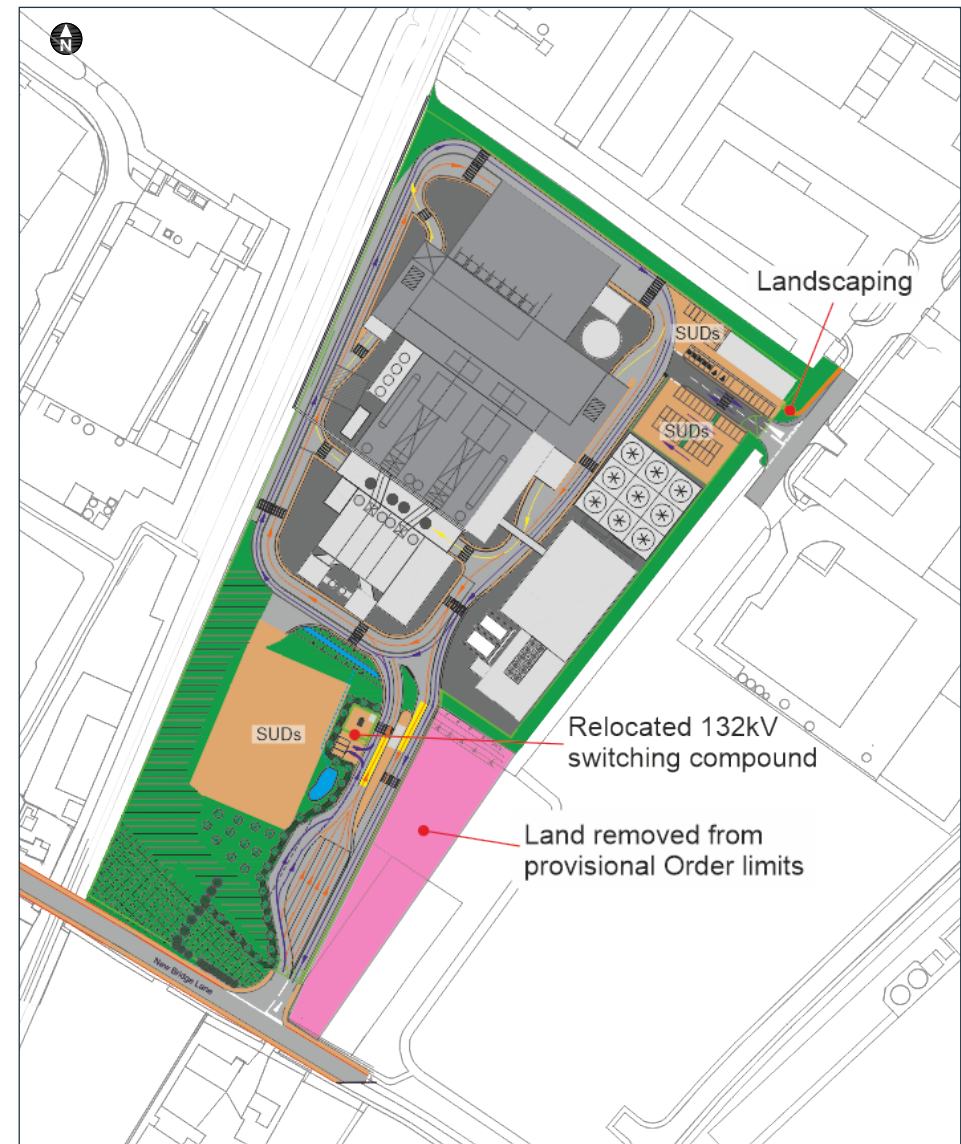
Having regard to representations to the statutory consultation and ongoing engagement with Stakeholders, the Applicant finalised the masterplan.

There was one main update to the layout. The Applicant had advanced discussions with UKPN over the necessary Grid Connection arrangements and was consequently able to conclude the requirements for the EfW CHP Facility Site's 132kV switching compound. A small clean/air insulated (non-SF6 gas) switching compound could be accommodated on land to the west of the gatehouse/weighbridge.

Minor layout updates included:

- Review of pedestrian footways and removal of separate footbridge (no longer required due to reduction in land take, see above);
- Updates to the surface water discharge points into the IDB drains;
- Additional landscaping at the staff and visitor entrance off Algores Way; and
- Incorporation of SUDs for the car park, 132kV switching compound and laydown maintenance area.

Graphic 8 Final masterplan



© Crown Copyright and database rights 2021 OS 100004458.



Design development

This section of the DAS explains the process that was undertaken to arrive at the design of the EfW CHP Facility subject to the DCO application. The design evolved via regular internal design and project meetings focusing on key project aspirations and decision making that influenced the scheme development. It was informed by the design principles referenced within this document and responded to comments received during the non-statutory and statutory consultation stages. A summary of the topics considered are listed below:

- **Scale, massing and roof profiles** – accepting the limitations inherent in the nature of the infrastructure proposed, how the design responds to the surrounding landscape and townscape.
- **Cladding colour and style** – the alternatives considered, and choices made to arrive at a design that complements the colours and materials of surrounding buildings.
- **Consultation comments** – particularly resulting from statutory consultation, how these informed the finalisation of the design with regard to:
 - ▶ **Design Quality** – how the design could be further improved.
 - ▶ **Sustainability and education** – the commitments made by the Applicant to produce a development that is adaptable and sustainable with a focus upon the administration building.
 - ▶ **3rd Part certification** – Applicant commitments to achieved recognised standards of building quality.
 - ▶ **Landscape and ecology** – how the buildings and landscape have been designed to provide maximum ecological benefit within the limitations of the Site discussed above.



Design Development pre-statutory consultation

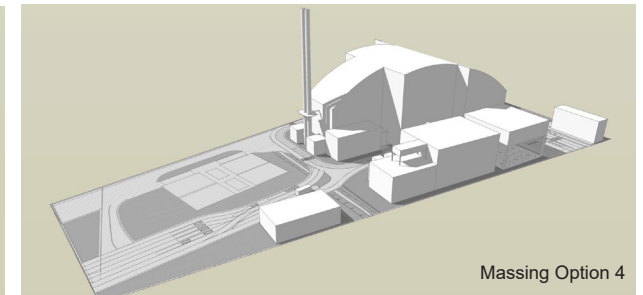
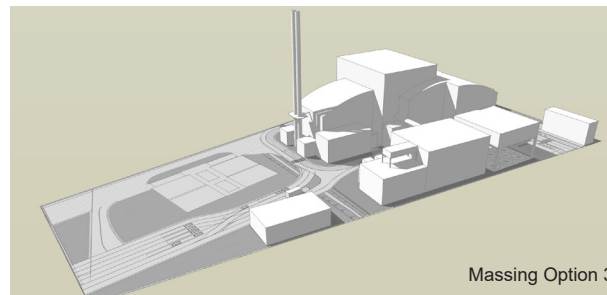
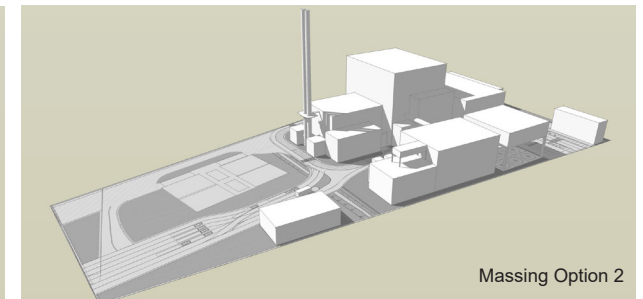
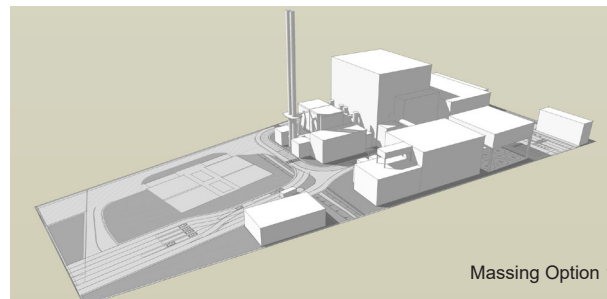
The preliminary EfW CHP Facility design and layout was developed in response to the process and plant requirements, taking into account the site constraints and opportunities highlighted in the previous section.

Scale, Massing and Roof Profile

3D Modelling and Photomontages

3D modelling and visualisations were used to explore the mass, scale and later, material choices. The massing model images opposite illustrate various approaches that were tested to determine the most effective massing for minimising the visual bulk of the facility.

A key design objective for the building was to minimise the visual impact. The heights of the buildings are determined by the EfW CHP Facility process requirements. Various massing approaches were considered. Common to all options was the approach of wrapping the medium height buildings around the main boiler house (the tallest building on the site apart from the chimney). This enables lower-level structures to be located around the EfW CHP Facility Site perimeter. The lower-level buildings relate more closely in scale to the adjacent industrial estate buildings to the north and east of the EfW CHP Facility Site. This approach helped to determine the location of the relatively lower height administration building in the north eastern corner of the EfW CHP Facility Site.



For the taller of the medium height buildings, careful consideration was given to roof profiles, cladding types and colours to minimise their visual impact.

Four alternative roof profile designs were considered for the central higher group of buildings. As illustrated in massing options 3 and 4, the large curved roof and half curved roof exaggerated the building size and contrasted strongly with the adjacent rectilinear and flat roofed buildings. The curved roofs also make the roof mounted plant more visible and make routine access and maintenance more hazardous.

Incorporating flat roofs, option 1 and 2 created the least visual impact due to having the lowest overall volume and could incorporate safe access to roof mounted plant.

Enclosing the APC silos and reactors and the bag filter houses (south of the boiler house building), option 2, had the added benefit of reducing the visual bulk of the structures and screens the assembly of plant and silos from public view.

Option 2 was selected by the Applicant for further design consideration.



Precedents

Precedent architectural approaches for EfW and large industrial developments were considered as part of the design development.

One approach is the 'big-box' architectural style, where large expanses of single coloured cladding are used to emphasise the scale of the development, often with 'hooded' projections to further emphasise the style. An alternative approach is a lower-key functional style, using profiled cladding with contrasting horizontal bands to minimise visual impact

The 'big-box' approach is used to best effect in open sites, where the style creates sculptural interest that can be appreciated from a distance. For this more enclosed site, where the EfW CHP Facility would be largely surrounded by relatively lower scaled industrial buildings, the more lower-key approach is considered to be more suitable. The use of contrasting areas of cladding helps reduce the apparent scale of the development in long and short views.



Precedents for the 'big-box' and 'functional' approaches





Cladding Colour

A simple palette of three tones of the same cladding colour was developed to create a cohesive appearance to all buildings. The initial colours considered were green, beige, silver/grey, blue and brown.

These tones were applied to the different structures, starting with the darkest colours at low level and the lightest colour at high level. This banding made the highest structure appear less over-bearing.

The 'earthy' (green/beige/brown) colour shades were discounted as they were considered to contrast unsympathetically with the surrounding buildings, which are predominantly lighter colours and shades of grey.

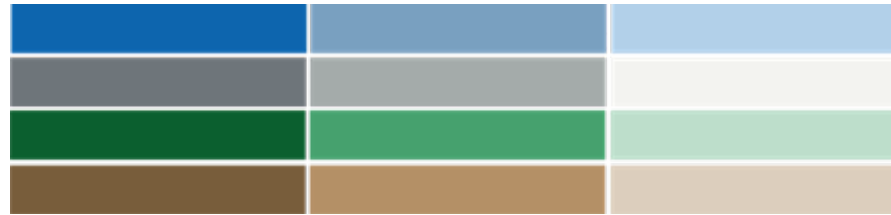
Blue tones were ruled out in favour of grey as the grey tones were considered to better complement the surrounding buildings. Furthermore, advice from the landscape architect suggested that the lighter grey cladding used for the highest parts of the EFW CHP Facility has the effect of blending with grey and blue skies, helping to reduce the visual impact.

Cladding Style

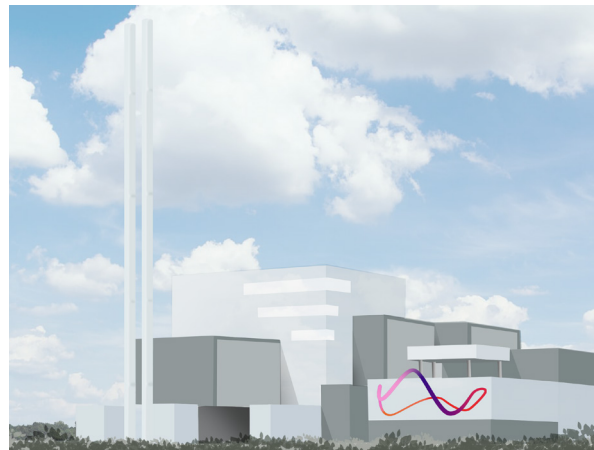
Profiled and flat built-up cladding options were explored to consider the alternative visual effect of using different textures and details.

The images to the right illustrate the alternative options that were considered, including a 'hooded' cladding option to the medium height buildings which proposed primary cladding 'wrapping' over secondary cladding. Use of the Applicants' 'wave' logo over secondary cladding was also considered; however, the visual appearance did not match the horizontal design. Both of these design options included a banding feature on the highest structure, with the narrow part of the banding designed to draw attention away from the highest point on the building.

Flat cladding in contrasting bands was identified as the preferred solution, providing the best option when taking into account visual, functional and maintenance requirements.



Images of 3D modelling undertaken to consider alternative cladding options





Statutory consultation

Sufficient progress on the EfW CHP Facility Site layout and building elevations had been made to present the Applicant's proposals for statutory consultation. Full details of the of the statutory consultation exercise and summaries of those representations received are reported in the **Consultation Report (Volume 5.1)**. The figure below highlights the main design matters that were raised.





Design Development post statutory consultation

A summary of the main representations that relate to the design of the EfW CHP Facility and were received during statutory consultation are summarised by the 16 boxes. In response to these representations, the design team reviewed how the design could respond. This review led to the identification of four improvement areas, these were:

- **Design quality** – To improve design quality, revisit the design of the building elevations.
- **Sustainability and education** – How the EfW CHP Facility can be made adaptable and sustainable with a focus upon the administration building to improve sustainability and promote waste awareness.
- **3rd party certification** – Commitment to achieving BREEAM ‘Excellent’ for the administration building, and ‘Good’ for all other buildings. Prepare the detailed design in consultation with the relevant planning authority.
- **Landscape and ecology** – Revise the landscape design to enhance biodiversity and increase use of native species.

Concerns about light pollution	Concerns about aviation lights on the chimneys	Chimneys could be taller to disperse emissions	Proposed chimney height too big for the area
Incongruous with the surrounding landscape and built environment	Adverse impact on the local character and surrounding countryside due to its large, prominent and industrial appearance	Need to take account of National Policy Statements regarding ‘good design’	Independent design advice should be sought
Should be located in a rural area	Should be located in an urban area	The industrial estate is an appropriate location	Concerns about the risk of flooding
Insufficient biodiversity and ecological enhancement and should deliver biodiversity net gain (BNG)	Communities should reuse / recycle rather than incinerate waste	No mitigation for the visual impacts	Proposed buildings are not aesthetically pleasing



Design quality



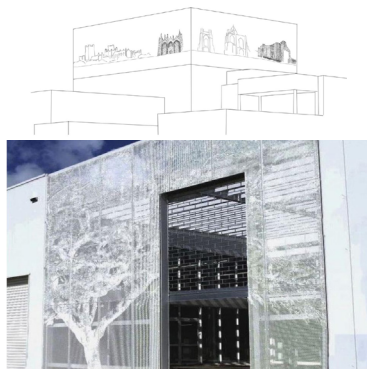
The location of the EfW CHP Facility is such that lower level views are restricted due to the presence of existing industrial and commercial buildings to the north, east and west. The cold store in particular restricts views from the east. Work undertaken by the Applicant's landscape architect indicated that it would be the boiler house which would be the more visible element of the EfW CHP Facility when seen from mainly medium distance views. As such, further consideration was given to how this part of the Proposed Development could be handled architecturally. The cladding alternatives from the previous design stage were revisited to explore how a narrative could be introduced into the design. The design team looked into the history of the Wisbech and Fenland area and how this could be represented in the design.

Several options were proposed to create over cladding to the structures. These options included green walls, a perforated cladding with stylised local imagery, and a kinetic cladding which can create shapes and patterns through the design and movement from the wind.

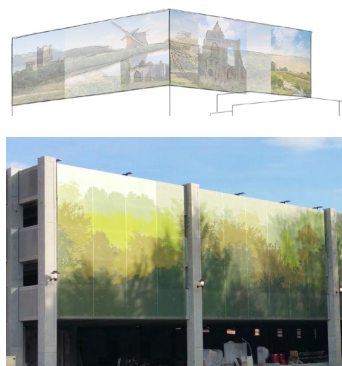
The Applicant chose the option of kinetic panels. These enable a consistency with the chosen colour palette and shades but also provide a contrasting texture and opportunity to create a local distinctive image on this part of the building. The final choice of panel type and the design and appearance of any selected image would be approved by the relevant planning authority post consent. Further consideration given to the position of the panels is provided in the next section of this statement.



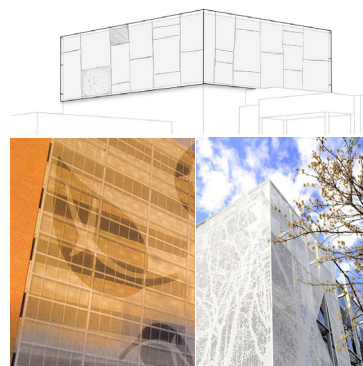
Highlighting key pedestrian view of the building (boiler house identified in red)



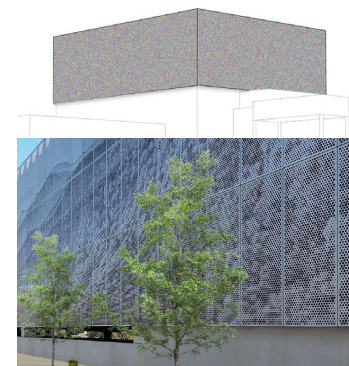
Perforated cladding (natural)



Perforated cladding (colour)



Perforated cladding/ kinetic cladding (detailed)



Kinetic cladding (panels)



Living wall



Positioning of over-cladding

To consider the effects of adding over-cladding to the EfW CHP Facility, four different potential positions were considered using the 3D model to visualise the alternative. Each option created a different emphasis on the elevations and overall appearance.

Option 1 proposed over cladding in several small areas on all buildings however it was felt over cladding the lower buildings created a cluttered visual appearance.

Option 3 proposed over cladding to the entire boiler house structure however this option overemphasised the highest and largest building elements.

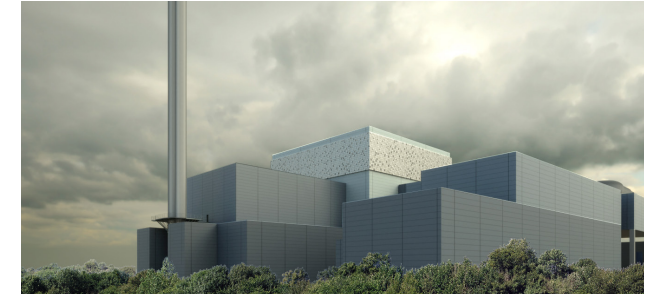
Option 4 introduced a second feature material, but it was not taken forward as it was considered to create an over fussy design.

Option 2 which proposed a band of over cladding to the boiler house, was the preferred approach as it maintained and enhanced the horizontality and simplicity of the earlier design.

Focusing upon the boiler house, for the reasons set out above the cladding would provide an architectural feature of interest in mainly medium but also some long-distance views. The use of kinetic panels would add texture to the boiler house and would respond and change the appearance subtly in different weather conditions'. Furthermore, such panelling provides opportunities to create a more bespoke elevational design should this be sought by the local community.



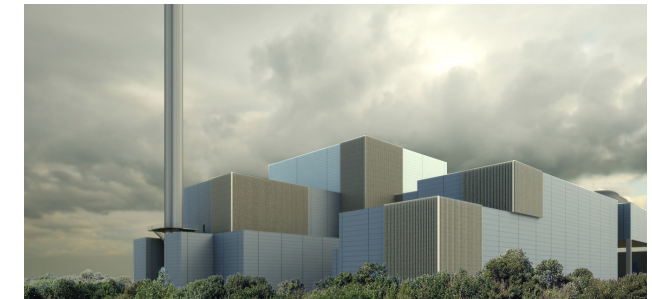
Option 1



Option 2

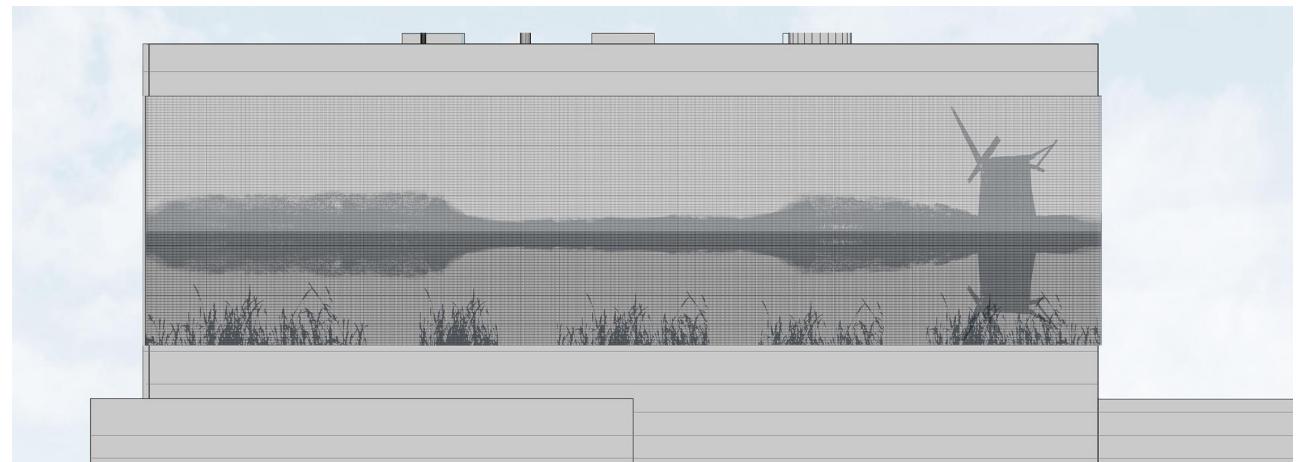


Option 3



Option 4

Example of kinetic cladding used to create images on building elevation





The imagery to the right illustrates the selected over-cladding concept, and how this had been applied to other precedent buildings

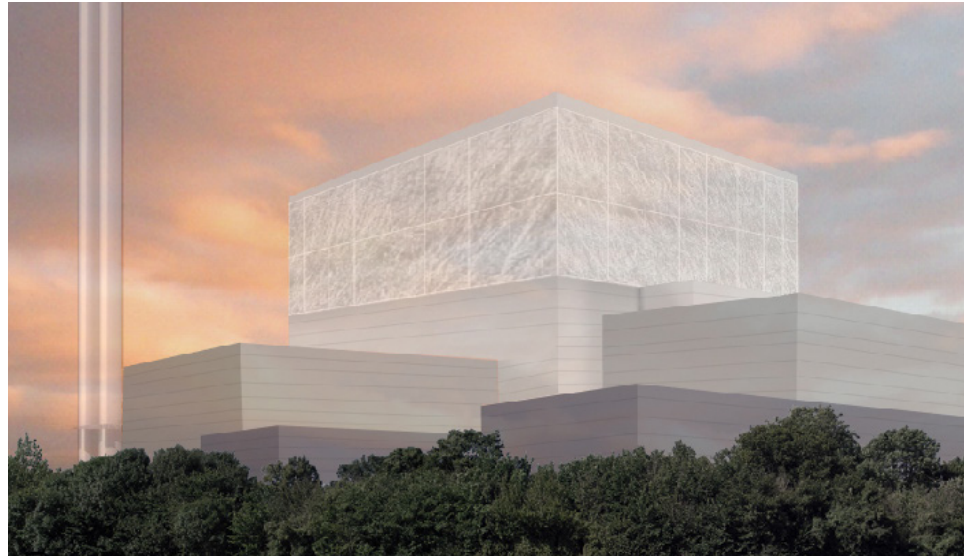
Both options maintain the horizontal design for lower and medium height buildings, introducing the possibility of an alternative treatment for the upper section of the taller boiler house. The upper image illustrates decorative metal perforated cladding, the lower image illustrates kinetic cladding.

The kinetic cladding option will be explored further post DCO consent and approved by the relevant planning authority. The over-cladding can be designed to incorporate local imagery to reflect the history and identity of the area. An indicative image of this effect is provided on page 28.

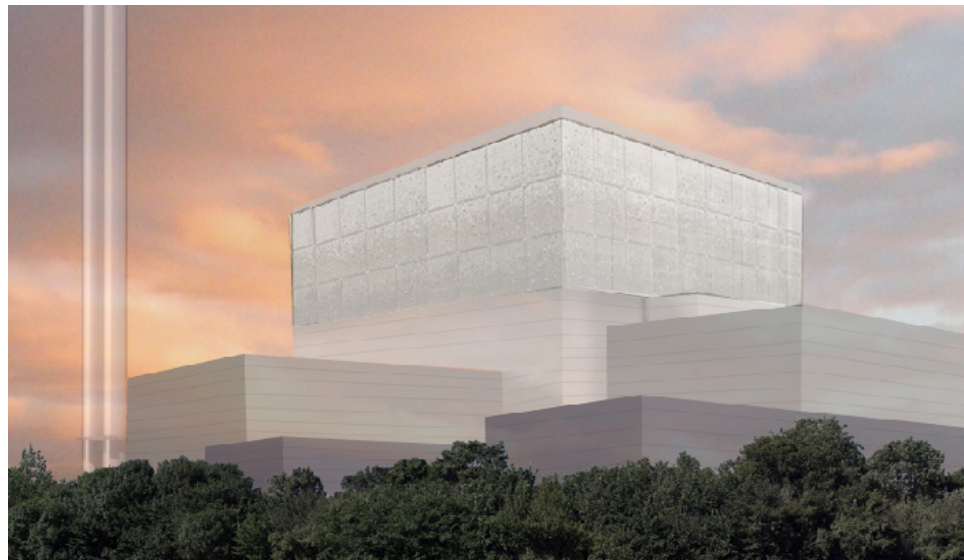
Photograph (1) displays perforated metal cladding used to create stylised images of trees. Photograph above illustrates a typical landscape in the Fens that could be used as inspiration for the decorative perforated cladding design.

Photograph (2) displays kinetic cladding and the patterns that can be created through choice of colours and how they are arranged on the kinetic panel.

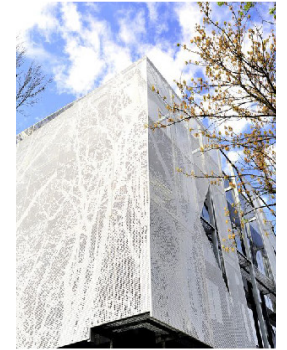
Images from 3d models used to consider over-cladding design options



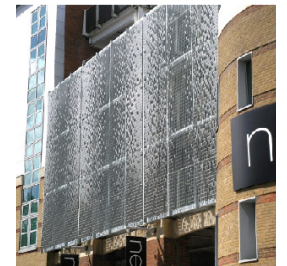
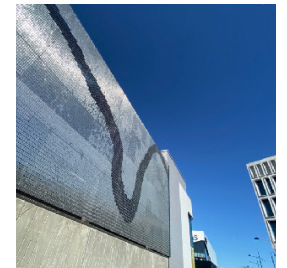
Decorative metal perforated cladding



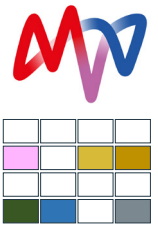
Kinetic cladding



Photographs (1)



Photographs (2)



Sustainability and education (The EFW CHP Facility including the administration building)

The EFW CHP Facility has been designed to be sustainable and adaptable. Its siting and design have been influenced by a comprehensive flood risk assessment which has been discussed with the Environment Agency and other key Stakeholders. It is adaptable in that it is designed to provide combined heat and power to local businesses and it is retrofit ready for carbon capture. More readily visible however, the design for the administration building was revisited to create an appropriate introduction to the Applicant's commitments to sustainability for visitors and the community.

There is an opportunity for the administration building - as the main occupied building, to be designed to contrast with the other EFW CHP Facility buildings, providing a more human-scaled building with a focus on sustainability, through the use of quality building materials and new technologies and to provide a base for the Applicant's waste awareness and education activities with the local community.

The administration building design development explored different floor plan layouts, roof styles and materials including timber cladding, brickwork, and render, with areas of green walls and glazing. These represent a warmer palette of materials to contrast with the metal cladding being used for the EFW CHP Facility process buildings.

The flat roof design was preferred as it allows the roof to be used by visitors and staff, providing views towards the EFW CHP Facility.

The administration building design has considered different forms of sustainability including building materials, integrated renewable energy generation, and rainwater harvesting.

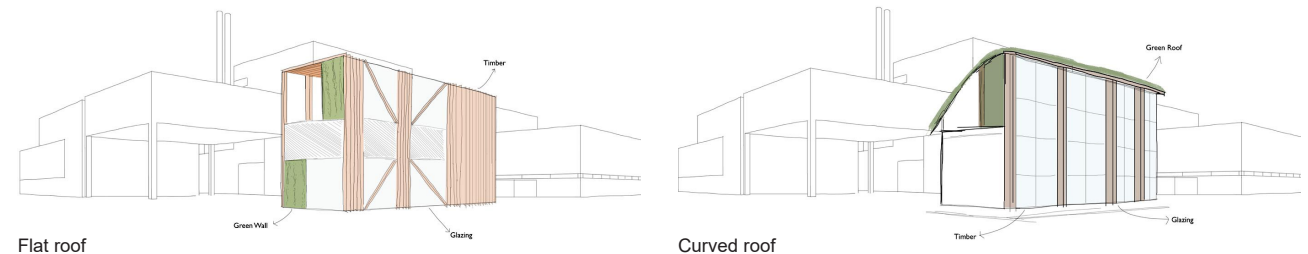
Roof styles considered included curved and flat with a preference for the latter which was considered to be more in keeping with surrounding buildings and a style that would provide opportunities to use the open roofspace to accommodate additional sustainability features such as a brown roof and/or solar panelling.

The initial consideration of the different cladding materials resulted in a preference for timber however the final choice of materials would be the subject of further detailed

design and consultation with the relevant local planning authorities and potentially, local community. Timber was considered to be a sympathetic material to sit alongside the areas of green walling which are proposed.

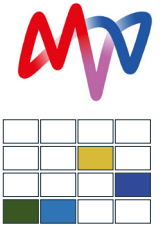
Feedback received at statutory consultation highlighted a need for waste education and awareness to be included as part of the Proposed Development. The internal layout of the administration building therefore includes for a community education area within which the Applicant will be able to organise educational events to promote waste minimisation, recycling and reuse along other 'sustainable' education initiatives.

Administration building roof concepts



Preliminary administration building concept design





Sustainable design

For any new development to be considered sustainable it should minimise as far as possible its impact upon the environment. The EfW CHP Facility aims to achieve a rating of BREEAM Good, with the administration building to achieve BREEAM Excellent. Excellence at the administration building would be achieved through a combination of the following:

Site layout and orientation

The administration building design orientation and glazing will allow solar gain during the winter months, with solar shading preventing overheating during the summer months.

Building fabric design

The administration building fabric will be highly insulated and air tight to reduce reliance on heating.

Landscape design

The landscape design to the administration building and EfW CHP Facility will provide biodiversity improvements and combine rainwater attenuation through SUDS features.

Material choices

The proposed cladding on the administration building could be hardwood, sustainably sourced timber with a clear finish to reduce maintenance and keep consistent colour and appearance. The building materials will achieve a BRE Green Guide A+ material rating as defined in the BRE guides. Alternative cladding choices such as brick and/or render would also be selected consistent with the appropriate material ratings to achieve the necessary BREEAM standard.

Building structure

The design will consider the use of a glulam structural frame which is an engineered timber product, with a combination of Cross Laminated Timber (CLT) panels for the walls, floors, and roof.

Renewable energy generation

Solar photo voltaic panels will be provided on the administration building roof.

Ventilation and cooling

The administration building will be naturally ventilated with solar shading to prevent overheating.

Energy use

All lighting will be LED, with a commitment to using energy efficient appliances.

Water consumption

Rainwater harvesting is proposed in the administration building, with low flow taps, showers, and dual flush WCs.

Infrastructure

The design proposes attenuation tanks for surface water run-off. Electric car charging points will be provided within the car park alongside the administration building.



The Walsoken Substation

Siting

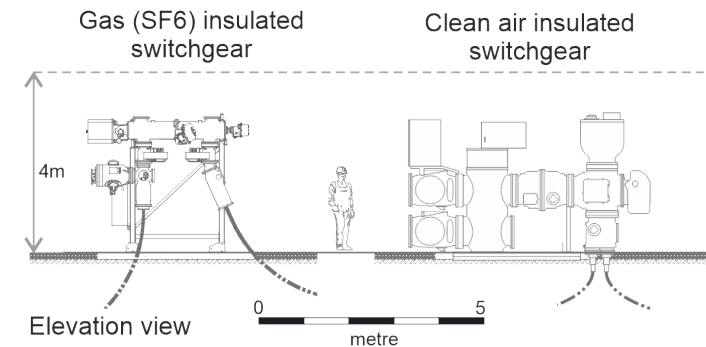
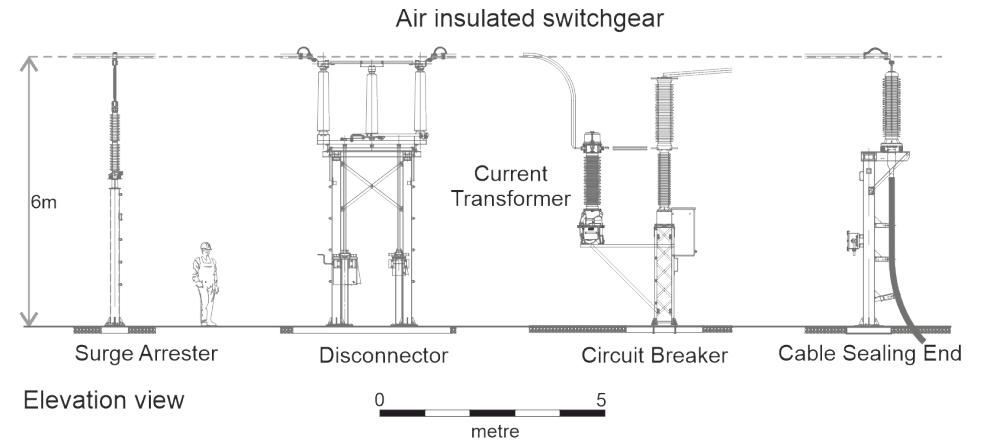
The choice of location for the Walsoken Substation is explained within **ES Chapter 2: Alternatives (Volume 6.2)** and in greater detail within **ES Appendix 2A Grid Connection Options Report (Volume 6.4)**. The selected site is UKPN land immediately adjacent to the Walsoken DNO Substation. Once selected consideration was given to how the necessary equipment could be located within the available land due to the presence of an existing overhead line and the belt of trees and shrubs which face onto Broadend Road.

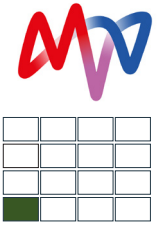
To prevent the need to open up the existing landscaped frontage to Broadend Road agreement was reached with UKPN to take access from the existing Broadend Road access. Different arrangements of equipment were then considered to identify one that avoided the placing of equipment beneath the overhead line and was consistent with the proposed access. The resulting arrangement minimises the requirement to remove existing vegetation and conforms with the necessary clearances as required by the electricity industry.

Design Development

The Applicant considered alternatives in relation to the substation equipment to be installed at its Walsoken Substation, located in front of the Walsoken DNO Substation (see above). Presently there are different switchgear technologies which can be used to control, protect and isolate electrical equipment. Traditionally these have been insulated using Sulphur Hexafluoride (SF6) which is an insulating and arc-suppressant gas. Draft NPS EN-5 Electrical Networks Infrastructure (September 2021) notes (paragraph 2.14.1) that SF6 is a potent greenhouse gas, and it goes on to state that its use in equipment should, as a rule, be avoided.

For this reason, the Applicant considered the use of alternative technologies these being air and clean air switchgear. Of the two options the clean air switchgear is favoured because it avoids the use of SF6 and is of a lower height (3.2m) when compared with the air insulated option which would be up to 6m tall. Whilst any infrastructure installed at the Walsoken Substation would be viewed in the context of the existing UKPN infrastructure, a lower structure is more easily screened by existing landscaping.





Landscape and ecology

The Outline Landscape and Ecology Strategy is illustrated overleaf and is supported by a separate **Outline Landscape and Ecological Management Plan (LEMP) (Volume 7.7)** and informed by a Tree Survey.

As there is little scope for landscape planting in proximity to the physical structures of the EfW CHP Facility, the landscape design is focused around the administration building and gatehouse weighbridge and the remaining open areas of the EfW CHP Facility Site.

Measures taken to accommodate the potential future reinstatement of the disused March to Wisbech Railway have, to a great extent, dictated the location and shape of proposed tree and shrub planting. To avoid their potential removal at a later date as part of the railway reopening, limited tree and shrub planting is specified within these areas with instead the creation of grassland habitat.

The location of new underground services and rainwater attenuation tanks has also influenced the location of tree and shrub planting and new tree planting along the western edge of the main access off New Bridge Lane has been spaced sufficiently far apart to accommodate lighting columns. The construction of the new main access onto New Bridge Lane, access improvements to New Bridge Lane and the accommodation of construction compound areas, temporary buildings and associated circulation necessitate the removal of the majority of the scrub and trees that are located at the southern end of the EfW CHP Facility Site. However, approximately half of the existing belt of poplar trees that are orientated north-south and are within the Order limits would be retained and protected in compliance with BS 5837.

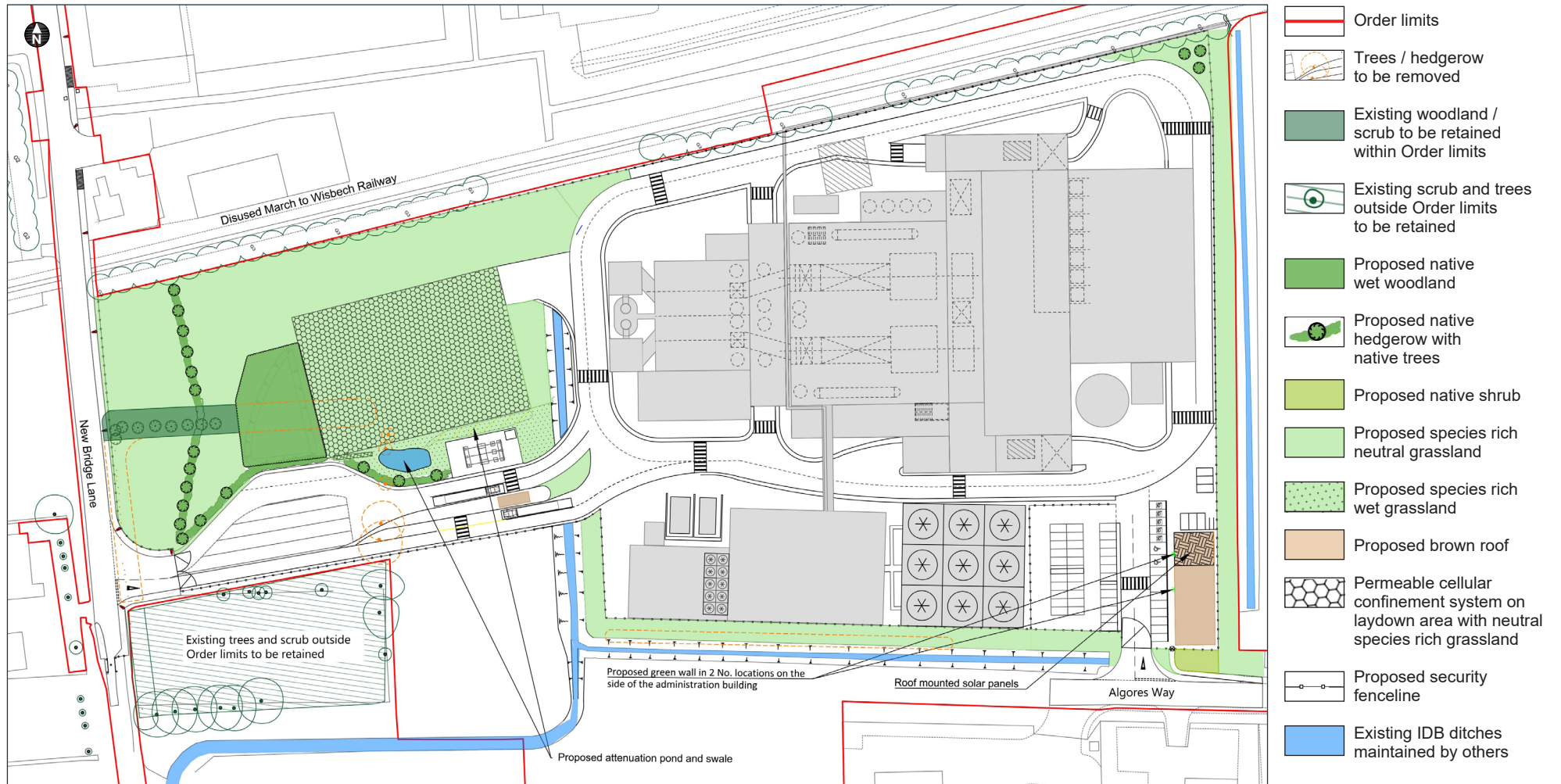
The presence of existing HWIDB ditches to the north, east and within the EfW CHP Facility Site and the requirement for a 6m maintenance strip clear of vegetation has also been influential in the landscape design.

Informed by the above the landscape design has sought to focus upon the principles of maintaining existing vegetation wherever possible, maximise biodiversity and to choose habitats and plant species which are reflective of surrounding habitats and which are better adapted to climate change.

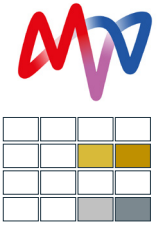
The majority of the areas where there are opportunities for landscape planting across the EfW CHP Facility Site are specified as a species rich neutral grassland with wildflowers to maximise biodiversity. The proposed planting associated with the attenuation basin, attenuation pond and swale is reflective of the periodically wet conditions in this area and includes an area of native wet woodland and a species rich wet meadow, noting the wet woodland would require periodic maintenance for the basin to retain sufficient hydrological capacity and a filter drain feeding an attenuation pond that would be permanently wet. Native species rich hedgerows with native species resilient to climate change would be specified along the western edge of the main access road and as a new east-west orientated hedgerow that provides connectivity between existing and proposed planting on the EfW CHP Facility Site and connects to scrub outside the Order limits alongside the disused March to Wisbech Railway. An area of native shrub planting is located at the eastern end of the administration building and the perimeter of this planting would be regularly clipped where the planting lies adjacent to footways. The green wall panels on the administration building would comprise evergreen or semi-evergreen climbers that are highly scented and provide a nectar source for insects. The brown roofs on the administration building and weighbridge would be formed from a mixture of site derived construction waste including crushed aggregate/ subsoil and would be seeded with a range of drought tolerant and mostly low growing native species.



Graphic 9 Outline landscape and ecology strategy



© Crown Copyright and database rights 2021 OS 100004458.



3rd Party Certification

Policy

The Applicant has appointed a consultant design team of ARB and RIBA architects, ecologists and CLIM landscape architects in response to the particular operational and site constraints and opportunities of this project.

Furthermore, advice and comments received during the rounds of consultation enabled the Applicant to identify those elements considered important by stakeholders and the local community in relation to design enabling the Applicant to focus its attention to those areas of the design where improvements could be made taking into account the functionality and health and safety requirements for the infrastructure (for example, those that elements such as the height of the chimneys for example is fixed by separate regulatory processes).

DCO requirement

This DAS presents a summary of Stage 1 and establishes the design principles (Appendix A). Stage 2 – the post DCO consent stage involves the preparation of detailed design drawings and further consultation and approval of the relevant local authority to ensure the design principles area met. A DCO requirement ensures that the detailed design will be substantially in accordance with the design principles set out in Appendix A.

BREEAM

BREEAM stands for Building Research Establishment Environmental Assessment Method. The Building Research Establishment, which founded the method in the UK in 1990, defines BREEAM as “The leading and most widely used environmental assessment method for buildings and communities. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building’s environmental performance”. Environmental assessments methods, such as BREEAM, have the aim to reduce the impact of buildings on the environment through the early design and development stages, construction stage and the building’s life span. Not only does BREEAM determine a building’s level of sustainability, but also the economic, environmental and social benefits that it has for the people linked to the life cycle of that building.

Summary

The Applicant’s commitments are that:

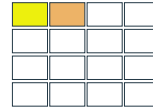
- The detailed design will be submitted to and approved by the relevant planning authority and must be substantially in accordance with the design principles; and
- The EfW CHP Facility to achieve BREEAM Good, with the administration building to achieve BREEAM Excellent.



Other design matters

External lighting

The Outline Operational Lighting Strategy (Appendix 3B Outline Lighting Strategy (Volume 6.4)) establishes the design objectives and parameters for the lighting of the EfW CHP Facility. Outside of the operational hours for the acceptance of waste, external lighting requirements would be limited to security and safety only. The lighting strategy aims to minimise lighting on the site; for example, through the use of lighting standards along main access route and the car park that have luminaires with full horizontal cut-off in order to minimise light spill and sky glow. Minimising light levels and spillage also mitigates effects upon wildlife.



The lighting design will take account of the recommendations of **Bat Conservation Trust Guidance Note 08/18, (2018)** – Bats and artificial lighting in the UK.

Rather than a flashing red light mounted at the height practical position on the chimneys, the Defence Infrastructure Organisation have confirmed an equivalent infra-red light is suitable and will be implemented by the Applicant.

Site security

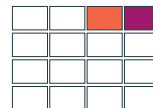
In keeping with its industrial setting, a new security fence would be installed along the boundary of the EfW CHP Facility Site. It would be either a welded mesh or palisade fence measuring up to 2.4m in height. Secure site access points would be provided on New Bridge Lane and Algores Way.



A high definition (1080p) Closed-Circuit Television (CCTV) monitoring system would be provided to cover and record key areas including the weighbridge, queuing area, access routes, pedestrian routes, un-loading and loading areas. The system would also cover unauthorised access to the EfW CHP Facility Site and be operational 24 hours a day.

Chimney height

The Environment Agency sets strict emission limits for the chimneys, and in part, this dictates the minimum height required to secure an Environmental Permit. **ES Chapter 8: Air Quality (Volume 6.2)** and the accompanying **Air Quality Technical Report Appendix 8B (Volume 6.4)** assessed the height and concluded it must be no lower than 84m above finished floor level (FFL). As part of their assessment of the Applicant's Environmental Permit application, the Environment Agency will review the air quality assessments and then confirm the chimneys' height. Should the Environment Agency require an increase in height to secure the Environmental Permit, **ES Chapter 3 Description of Development (Volume 6.2)** allows for a final chimney height of 84m to 90m above FFL.



Flood Risk

In the development of the EfW CHP Facility's surface water drainage arrangements the Applicant has engaged with Stakeholders to ensure proposals are suitable for the location and do not exacerbate flood risk. The environmental impacts of the Proposed Development including those associated with flood risk have been assessed and reported in **ES Chapter 12 Hydrology (Volume 6.2)**. Due to their low laying nature, many areas within the Fens are at risk flooding, but benefit from defences managed by the Environment Agency. However, the Applicant has assessed extreme events, including changes due to climate change, where these defences fail. The assessment concludes that with embedded mitigation, there are no significant impacts related to the risk of flooding. The embedded mitigation includes a finished floor level (FFL) of the EfW CHP Facility to be 3m Above Ordnance Datum (AOD) and to implement an Operational Drainage Management Plan. **The Outline Drainage Strategy (Volume 6.4)** accompanies the DCO application.



Access

The main access to the site would be via a reopened New Bridge Lane with a secondary access (for staff and visitors) via a relocated access onto Algores Way. The New Bridge Lane access would cross the disused March to Wisbech Railway and would serve to allow the HGVs delivering waste to arrive at the EfW CHP Facility at the shortest point from the strategic road network (the A47). New Bridge Lane would be widened consistent with previous proposals for this road as set out in the Wisbech Access Strategy whilst the Proposed Development demonstrates its adaptability through the identification of land sufficient to enable the construction of a road bridge over the March to Wisbech Railway should it be reopened. This adaptability is also inherent in the design for the CHP Connection which would be sited within the railway corridor but positioned such that it would not affect its future reopening.





The Proposed Design

Informed by national policy and the four design principles which have been derived from NPS EN-1 concerning 'good design' the Applicant has arrived at a Proposed design which it considers to be attractive and responsive to setting (whilst accepting the inherent restrictions associated with the nature of the energy infrastructure) durable and adaptable, functional and fit for purpose having evolved through the appropriate consideration of alternatives.

The following section presents the siting and design for the proposed EfW CHP Facility contained in the DCO application, including access and explains the concept of the Rochdale envelope and the use of limits of deviation. Given that the design would be subject to further detail at Stage 2, consistent with appropriate DCO requirements, it presents also a number of design principles which will be adopted.





Rochdale envelope

Introduction

The description of the EfW CHP Facility presented in **ES Chapter 3 Description of the Proposed Development (Volume 6.2)** outlines the likely size and scale of each project component. However, the detailed design of the EfW CHP Facility would be determined post-consent once the Applicant has appointed an EPC contractor. The draft DCO submitted with this Application includes a requirement for details of the final design to be submitted and approved by the relevant planning authority prior to commencement of construction. The assessment of the Proposed Development is therefore based on a set of parameters, commonly referred to in undertaking an EIA as a Rochdale Envelope or Limits of Deviation (LoD).

PINS Advice Note Nine: Rochdale Envelope (July 2018) (Version 3) sets out advice for using the Rochdale Envelope approach for the assessment of Nationally Significant Infrastructure Project applications.

The ES sets out the findings of an assessment of the Rochdale Envelope and the key parameters as described further below.

To provide a robust assessment, each topic specific assessment presented in **Chapters 6 – 17 (Volume 6.2)** has been undertaken on a reasonable worst-case scenario for that given topic. The reasonable worst-case scenario for each topic differs depending upon the particular assessments being undertaken and the chapters set out the scenario for that topic. However, all assessments have been undertaken within the broadest reasonable parameters, to ensure the assessment is precautionary in its approach.

Parameters for the assessment

Maximum dimensions that have been assumed for particular key components of the EfW CHP Facility are set out below in **Table 2 EfW CHP Facility Limits of Deviation** and illustrated on **Graphics 10 and 11** below. The limits of deviations for the key components of the EfW CHP Facility Site are required to accommodate the detailed design phase and any consequential adjustments to building(s)/structure(s) dimensions and ancillary roof-mounted equipment and enclosures for these.

To allow for minor variations in the final positioning of buildings and structure, a lateral LoD of 5m is proposed and illustrated on **Graphic 12** below.





Table 2 EFW CHP Facility Limits of Deviation

Works No.	Description	Figure 3.6 ID Reference	Maximum length	Maximum width	Maximum height (above FFL)	Lateral deviation	Comment
2A	Gatehouse/weighbridge	ID01	9.5m	2.4m	3m	Up to 5m	2 x weighbridge to be positioned to align with gatehouse
1	Tipping hall	ID02	58.5m	38m	18.5m	Up to 5m	
2A	Fire water tank & fire water pump building	ID03	-	-	-	Up to 5m	For dimensions see ID3a and ID3b
2A	Fire water tank	ID03a	-	16m(Ø)	10m	-	
2A	Fire water pump building	ID03b	12.5m	9.5m	5.5m	-	
1	Waste bunker building	ID04	102m	37m	38.5m	Up to 5m	
1	Tipping bunker	ID04a	-	-	-14m	-	Internal to ID04
1	Main waste bunker	ID04b	-	-	-14m	-	Internal to ID04
1	Waste chute platform	ID04c	-	-	-	-	Internal to ID04
1	Control room	ID04d	-	-	-	-	Internal to ID04
1	Crane maintenance areas	ID04e	-	-	-	-	Internal to ID04
1	IBA storage bunker and loading areas	ID04f	-	-	-	-	Internal to ID04
1	Boiler house building	ID05	55m	47.6m	52m	Up to 5m	
1	Air pollution control storage area	ID06	-	-	-	Up to 5m	For dimensions see ID6a to ID6c
1	Loading area	ID06a	12.2m	12.2m	12m	-	
1	APCr silos	ID06b	33.3m	12.2m	37m	-	
1	Loading area	ID06c	12.2m	12.2m	12m	-	



Works No.	Description	Figure 3.6 ID Reference	Maximum length	Maximum width	Maximum height (above FFL)	Lateral deviation	Comment
1	Air pollution control building	ID07	33.2m	28.6m	37m	Up to 5m	
1	APC plant, silos and reactors	ID07a	-	-	-	-	Internal to ID07
1	Bag filter houses	ID07b	-	-	-	-	Internal to ID07
1	Induced draft fans buildings	ID08	10m	10m	12m	Up to 5m	2 x Induced Draft Fans building
1A	Chimney and continuous emissions monitoring systems (CEMS)	ID09	-	-	-	Up to 5m	For dimensions see ID09a and ID09b
1A	Chimneys	ID09a		3.2m(Ø)	90m		2 x chimneys
1A	CEMS platform	ID09b			18m		To base of platform
1	Switchgear building	ID10				Up to 5m	
1	Switchgear building north	ID10a	35.2m	10m	35m		
1	Switchgear building south	ID10b	12.4m	10m	18m		
1	IBA loading enclosures	ID11				Up to 5m	
1	IBA enclosure east	ID11a	14m	11m	12m		
1	IBA enclosure west	ID11b	11m	6m	12m		
1	Diesel tanks and urea tanks building	ID12	25.9m	9.1m	35m	Up to 5m	
1	Compressed air station	ID13	13m	8m	10m	Up to 5m	
2A	Main transformer	ID14	11m	6m	12m	Up to 5m	
1	Emergency diesel generator	ID15	13.5m	5.5m	12m	Up to 5m	
1	Air cooled condenser	ID16	37m	37m	30m	Up to 5m	

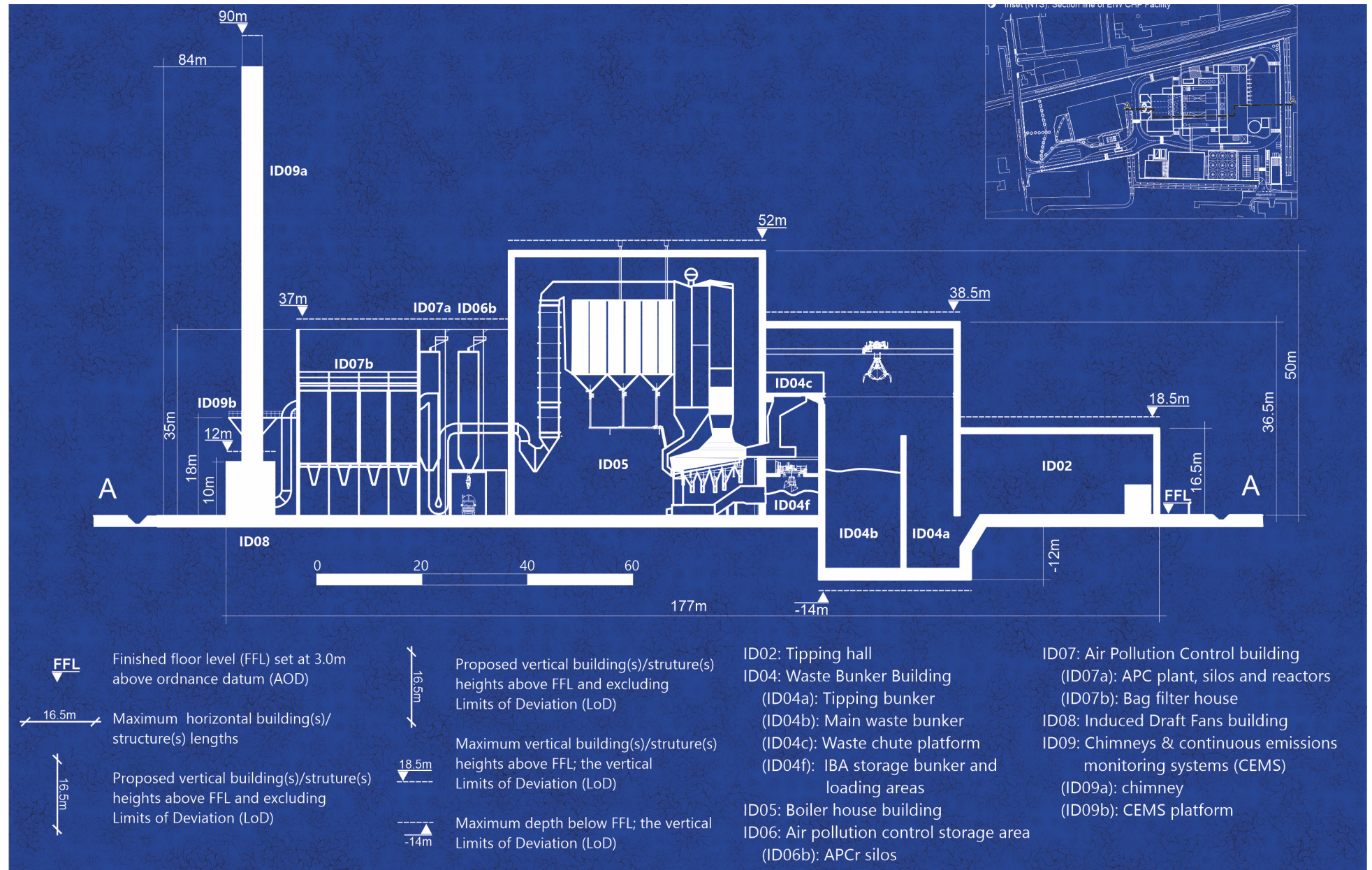


Works No.	Description	Figure 3.6 ID Reference	Maximum length	Maximum width	Maximum height (above FFL)	Lateral deviation	Comment
1	Turbine hall	ID17	47m	34m	27m	Up to 5m	
1	Water treatment plant	ID18	30m	22m	18m	Up to 5m	
2A	Workshop and stores	ID19	34m	15m	18m	Up to 5m	
1B	Administration building	ID20	34m	12m	15m	Up to 5m	
2A	132kV switching compound	ID21	23m	13m	6.5m	Up to 5m	
2A	Private wire transformer	ID22	11m	5m	12m	Up to 5m	
2A	Private wire switchgear compound	ID23	7m	6m	12m	Up to 5m	
1	Water re-cooling system	ID24	18.5m	7.5m	27m	Up to 5m	Roof mounted on ID18. Height of ID24 alone is 9m.
3	Steam and condensate pipelines	ID25	-	-	23m	Up to 5m	Maximum height for ID25a and ID25b.

Note: lateral Limits of Deviation displayed on the Works Drawings include the 5m deviation allowance

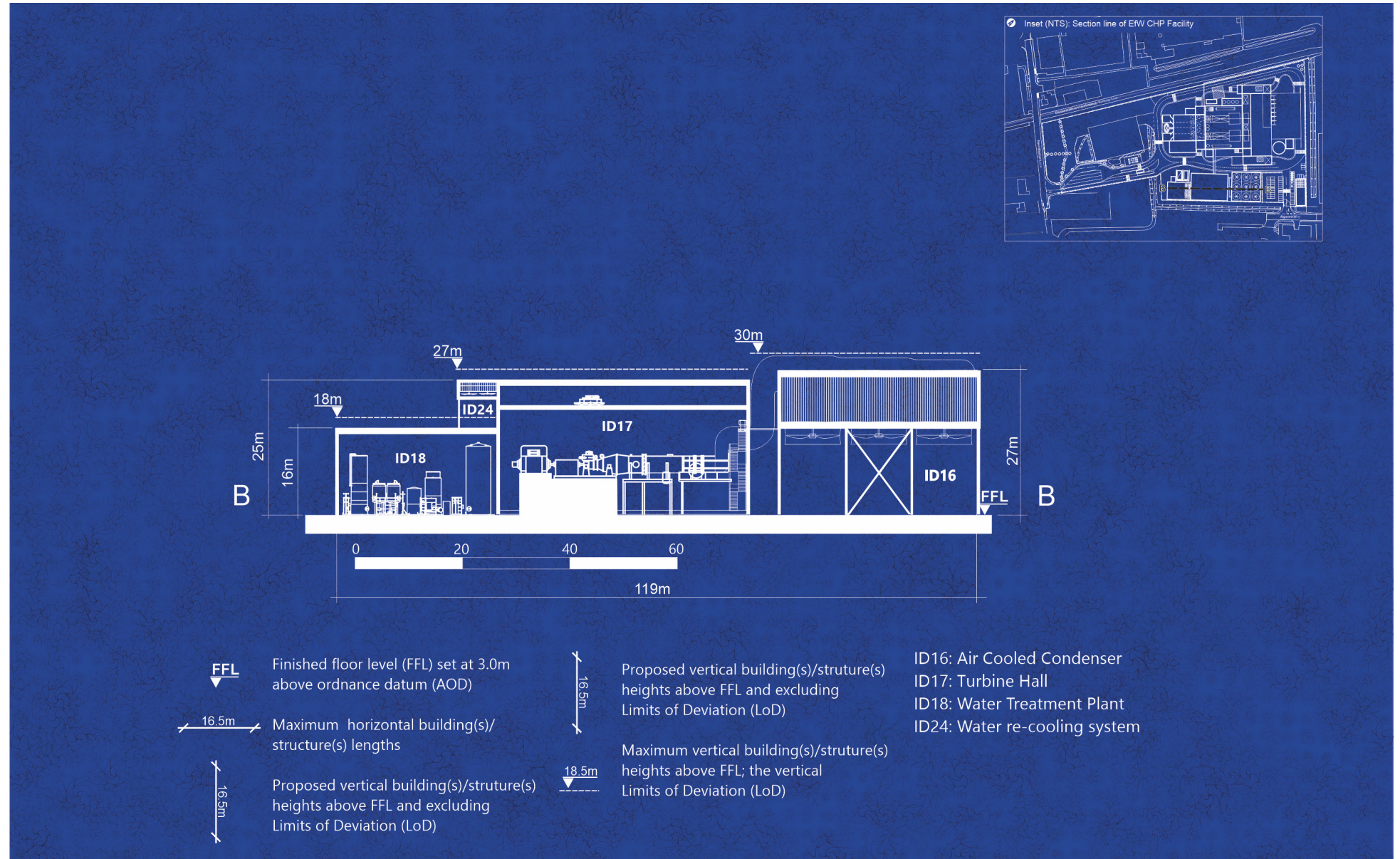


Graphic 10 EfW CHP Facility Vertical Limits of Deviation (reception hall to chimneys)



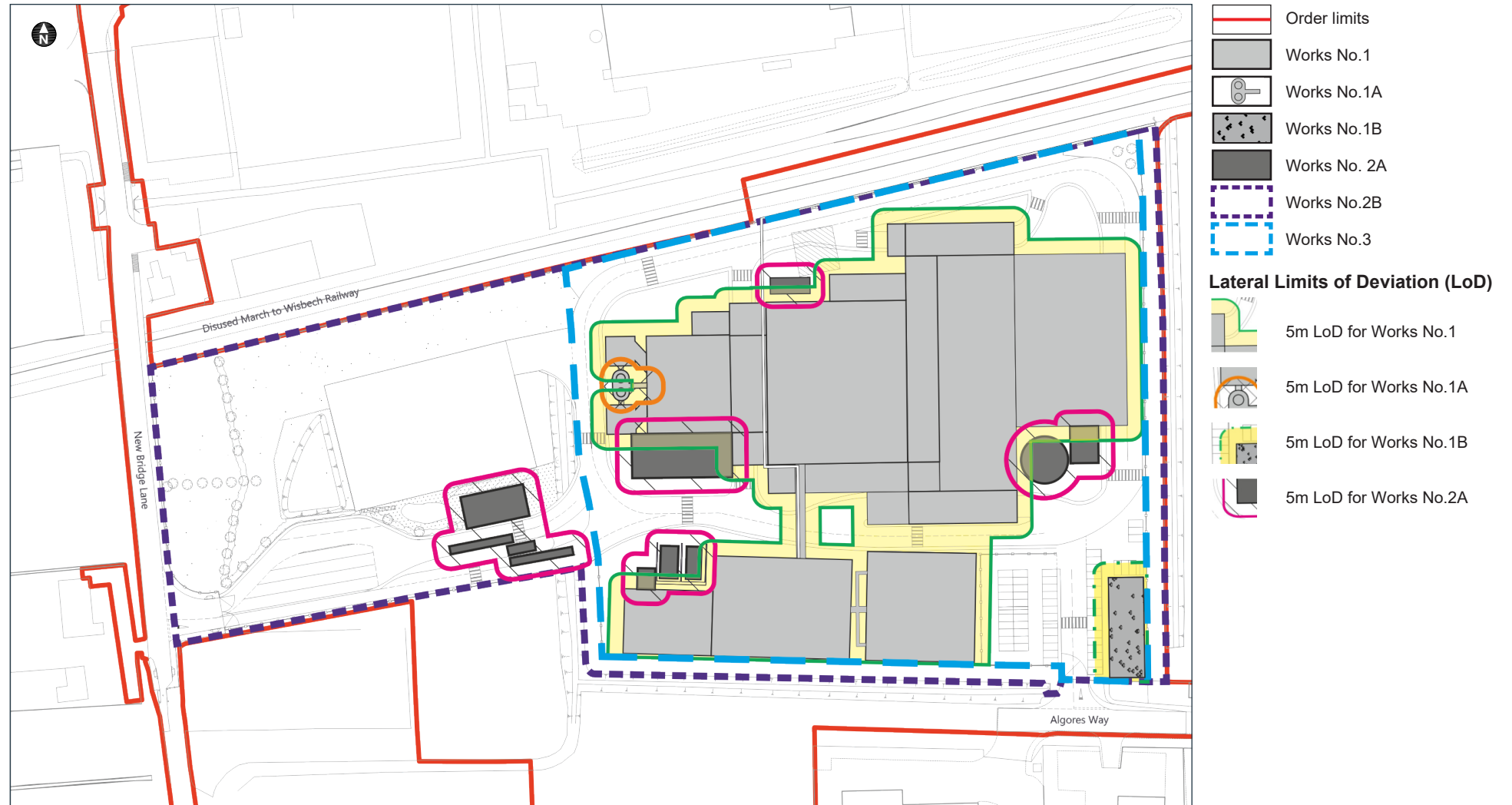


Graphic 11 EfW CHP Facility Vertical Limits of Deviation (ACC to Water Treatment Plant)





Graphic 12 EfW CHP Facility lateral limits of deviation



© Crown Copyright and database rights 2021 OS 100004458.

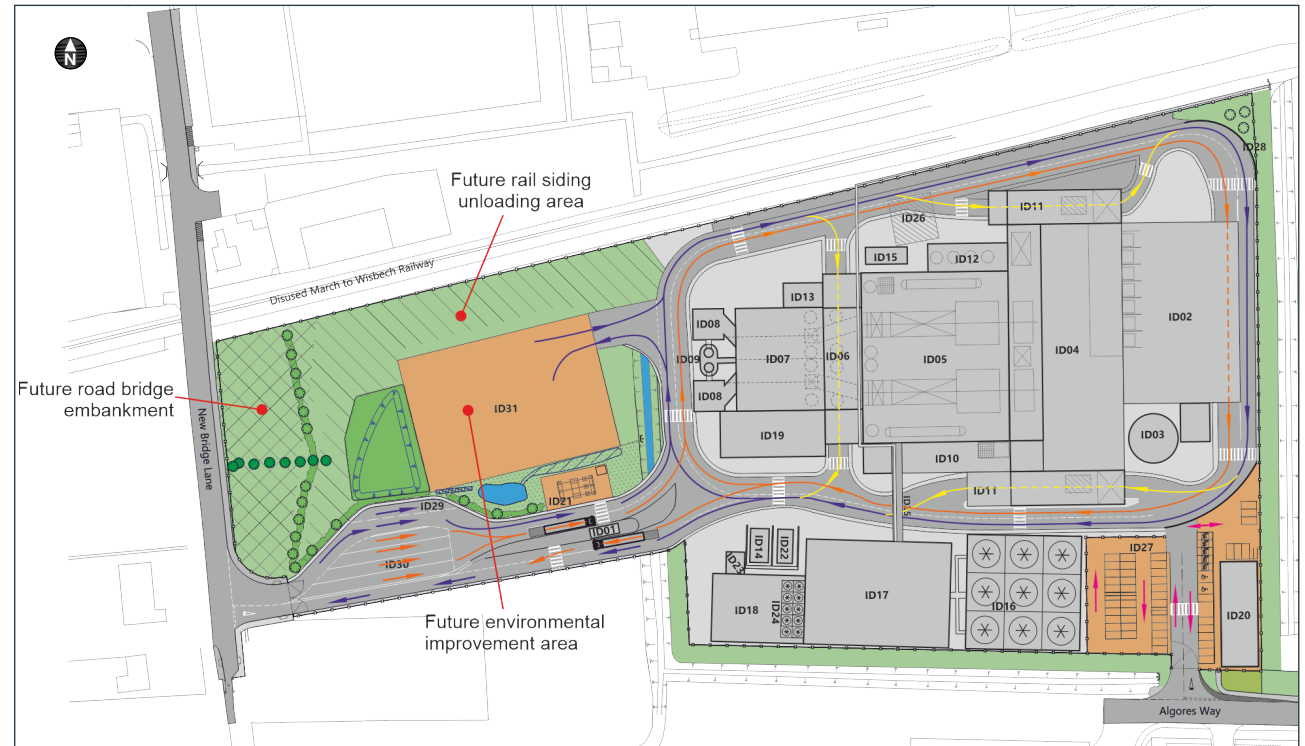


EfW CHP Facility Layout

The EfW CHP Facility site layout has been informed by existing constraints and opportunities, responses to consultations held as well as an awareness of the need to be adaptable to future requirements. It has had to be informed by relevant technical and safety needs as well as the requirements of key consultees such as the HWIDB and Environment Agency. In summary the layout accommodates:

- HWIDB surface water drainage requirements and ditch standoff distances.
- The requirements of the relevant highway authority in the context of a reopened New Bridge Lane and relocated Algores Way access.
- Ensures that the key operational processes are concentrated furthest way from existing residential dwellings on New Bridge Lane.
- Enables ease of access and circulations within the site, providing a simple one-way system for delivery whilst segregating staff and visitors from operational HGVs.
- Demonstrates adaptability by being designed to accommodate a future rail bridge, Carbon Capture apparatus and a rail unloading areas.

Graphic 13 EfW CHP Facility layout



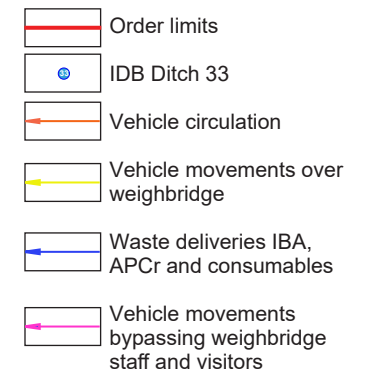
© Crown Copyright and database rights 2021 OS 100004458.

ID01: Gatehouse/weighbridge
 ID02: Tipping hall
 ID03: Fire water tank & fire water pump cabin
 (ID03a): Fire water tank
 (ID03b): Fire water pump
 ID04: Waste bunker building
 (ID04a): Tipping bunker
 (ID04b): Main waste bunker
 (ID04c): Main waste chute
 (ID04d): Control room
 (ID04e): Crane maintenance area
 (ID04f): IBA storage bunker and loading areas
 ID05: Boiler house building

ID06: Air pollution control storage area
 (ID06a): Loading area
 (ID06b): APCr silos
 (ID06c): Loading area
 ID07: Air pollution control building
 (ID07a): APC plant, silos and reactors
 (ID07b): Bag filter houses
 ID08: Induced draft fans cabins
 ID09: Chimneys & continuous emission monitoring systems (CEMS)
 (ID09a): 2x chimneys
 (ID09b): CEMS platform
 ID10: Switch gear building
 (ID10a): Switch gear building north

(ID10b): Switch gear building south
 ID11: IDB loading enclosures
 (ID11a): IDB loading enclosures east
 (ID11b): IDB loading enclosures west
 ID12: Diesel tanks and urea tanks building
 ID13: Compressed air station
 ID14: Main transformer
 ID15: Emergency diesel generator
 ID16: Air cooled condenser
 ID17: Turbine hall
 ID18: Water treatment plant
 ID19: Workshop and stores
 ID20: Administration building
 ID21: 132kV Switching compound

ID22: Private wire transfer
 ID23: Private wire switchgear compound
 ID24: Water re-cooling system
 ID25: Steam and condensate plates
 (ID25a): Steam and condensate pipelines to/from boiler house building
 (ID25b): Steam and condensate pipelines to/from CHP connection
 ID26: Mobile crane slab
 ID27: Parking area
 ID28: Fence/gates line
 ID29: Layby
 ID30: Vehicle queuing area
 ID31: Laydown maintenance area





EfW CHP Facility access to strategic road network

Access to and from the EfW CHP Facility Site has followed the principle of taking the shortest route from the existing junction for the nearby strategic road network, the A47. The main access into the site which has been set out in the description of the site layout is to use a reopened New Bridge Lane which would be accessed from Cromwell Road and hence the A47. This would minimise traffic on the local highway network and the Applicant proposes to restriction HGV delivery vehicles from travelling further along Cromwell Road to Weasenham Lane or from travelling south from Elm High Road for example.

Access proposals for New Bridge Lane are compatible with the principles of the Wisbech Access Strategy and retain the ability to reopen the discussed March to Wisbech Railway.

Pedestrian footpaths link the site to Cromwell Road and the bus routes which run along it whilst cycle facilities would be provided alongside the proposed administration building.

Staff and visitor safety is ensured by the segregation of accesses.

Graphic 14 Proposed HGV access route to EfW CHP Facility site



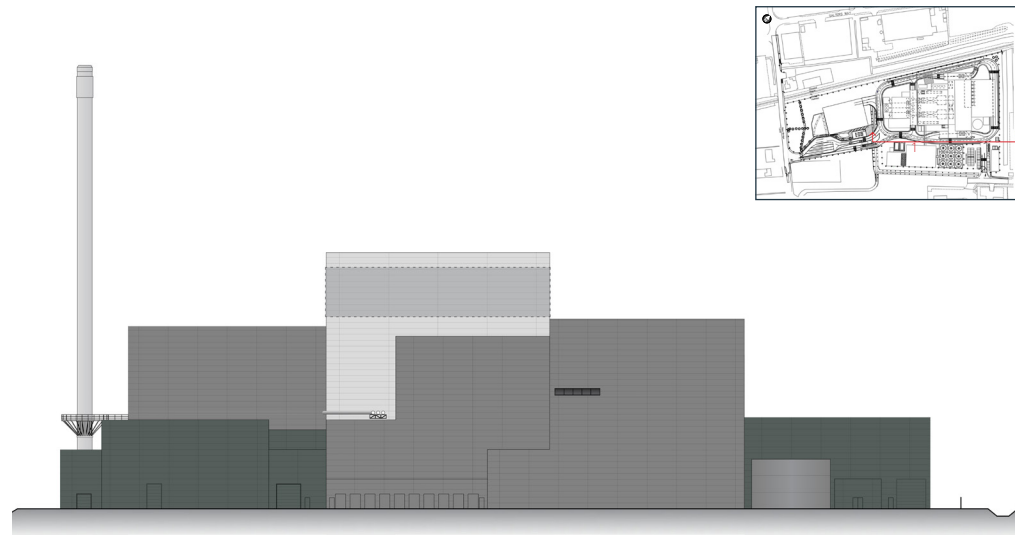


Appearance and context

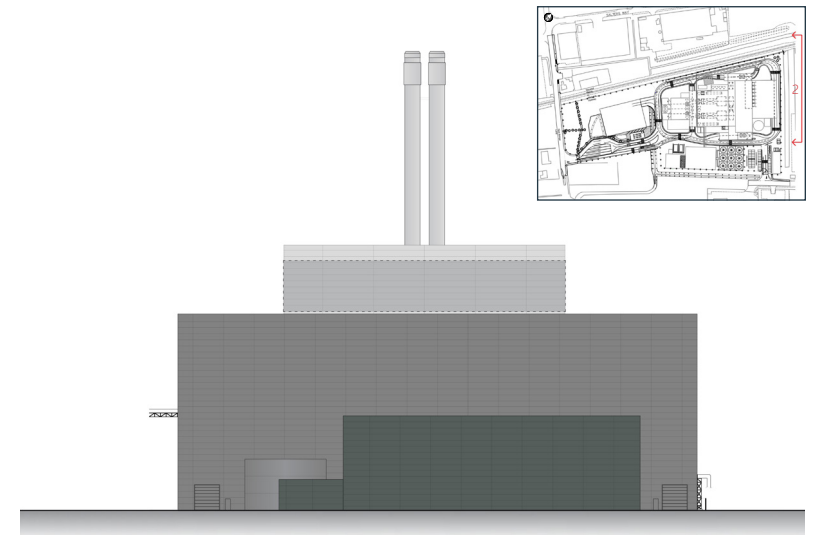
The final Stage 1 design for the EfW CHP facility including the administration building is illustrated in the following elevation drawings whilst a selection of photomontages that follow illustrate how it would sit within the surrounding context of industrial and commercial buildings. The full range of photomontages and wireframes are provided within **ES Chapter 9 Landscape and Visual Figures 9.17 to 9.46 (Volume 6.3)** whilst the elevational drawings for the EfW CHP Facility and Administration building are in **Chapter 3: Description of the Proposed Development, Figure 3.7i-iv EfW CHP Facility elevations and Figure 3.26 administration building elevations (Volume 6.3)**.

The EfW CHP Facility would be clad in a metal (aluminium or steel) cladding system adopting a grey colour palette. The RAL colours indicated are the Applicant's suggested choice but the finalisation of shades and profiles would be the subject of subsequent agreement post consent with the relevant local planning authority. For security purposes personnel doors would be steel with composite or metal roller shutter doors. Window frames would be aluminium.

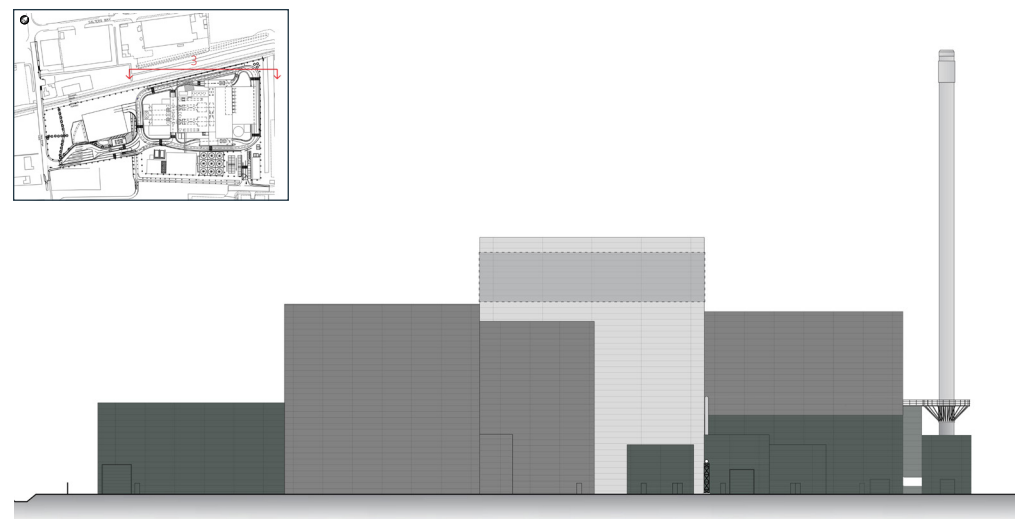
Grey White RAL 9002	Light Grey RAL 7035	Agate Grey RAL 7038
Pure Grey RAL 000 55 00	RAL 7011	RAL 7012
Merlin Grey RAL 180 40 05	RAL 7016	RAL 7021



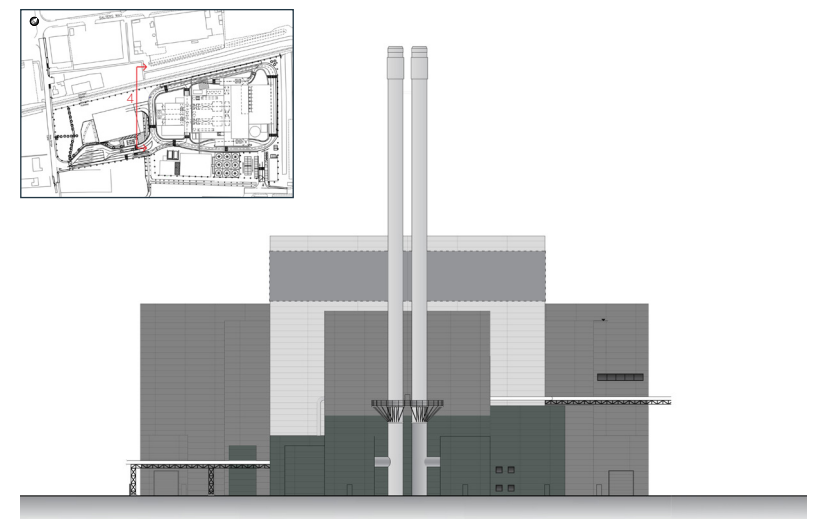
Elevation 1



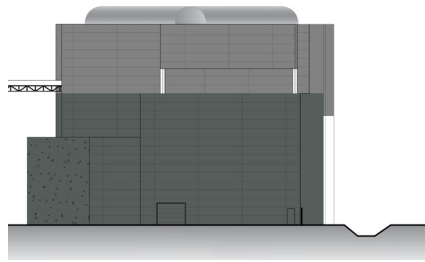
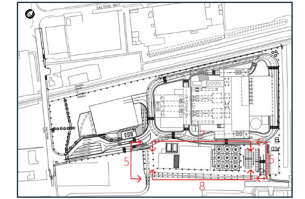
Elevation 2



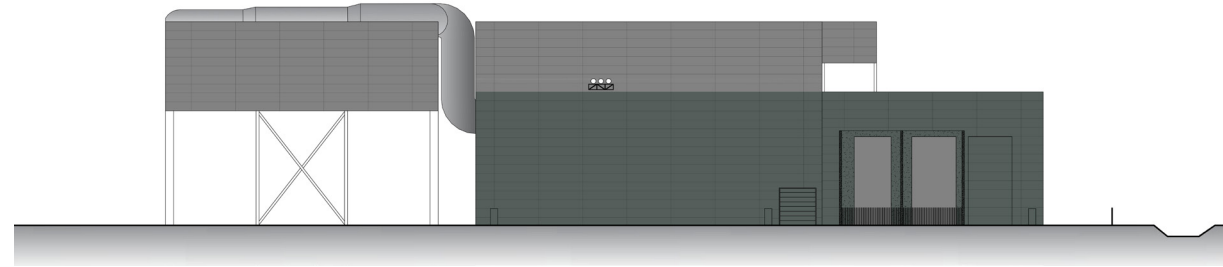
Elevation 3



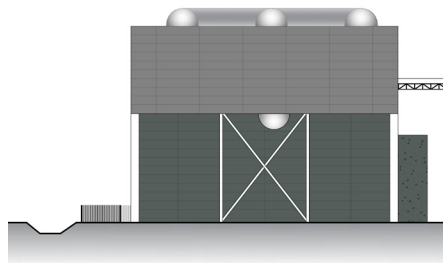
Elevation 4



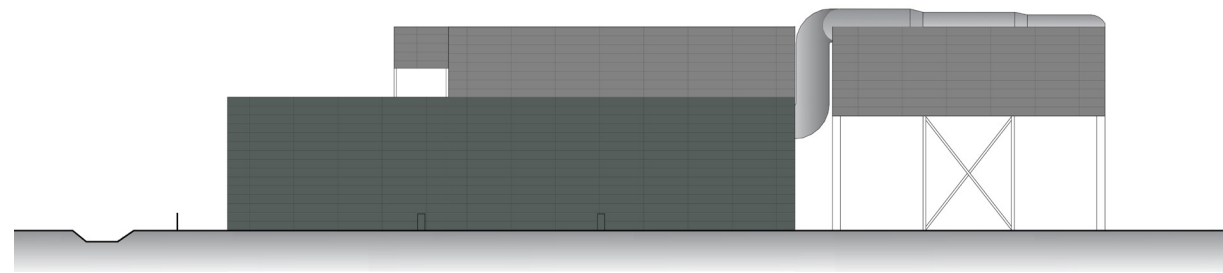
Elevation 5



Elevation 7



Elevation 6



Elevation 6



The following photomontages illustrate the Proposed Development from two local viewpoints. The full suite of photomontages and other illustrative images can be found within the figures associated with **ES Chapter 9 Landscape and Visual Assessment (Volume 6.3)**.

EfW CHP Facility - existing view from A47 roundabout



EfW CHP Facility - photomontage view from A47 roundabout





EfW CHP Facility – existing view from Lidl Car Park Cromwell Road



EfW CHP Facility – photomontage view from Lidl Car Park Cromwell Road





Administration building

The design evolution of the administration building has been explained within this DAS. It has justified the choice of a flat roof over a curved roof and the cladding material considered. Importantly, in the concept of 'good design' it has explained the design improvements undertaken following statutory consultation to improve the sustainability of the building and to make it more adaptable.

The final design for the administration building features:

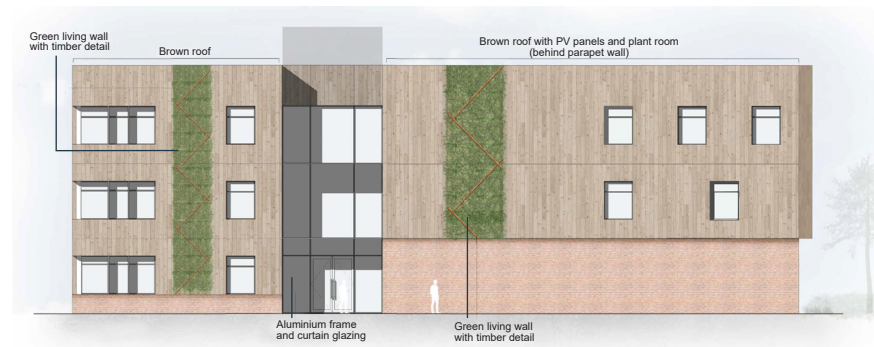
- Solar panels across one third of the roof to generate electricity and rainwater harvesting to reduce the requirement for potable water.
- A brown roof using local site-won materials to create an important ecological habitat with provision of a viewing area within which education activities focussing upon sustainable energy generation and habitat creation could be held.
- A commitment to sustainable building materials be they external wood cladding, brick or render.
- The installation of green walls to create additional, different ecological habitats.
- A dedicated community space within the building to hold educational and training activities with a focus upon sustainability and waste awareness.
- The whole building package as BREEAM 'Excellent'.



North-east elevation



North-west elevation



South-west elevation



South-east elevation



View from the car park



View from Algores Way



Design and access conclusion

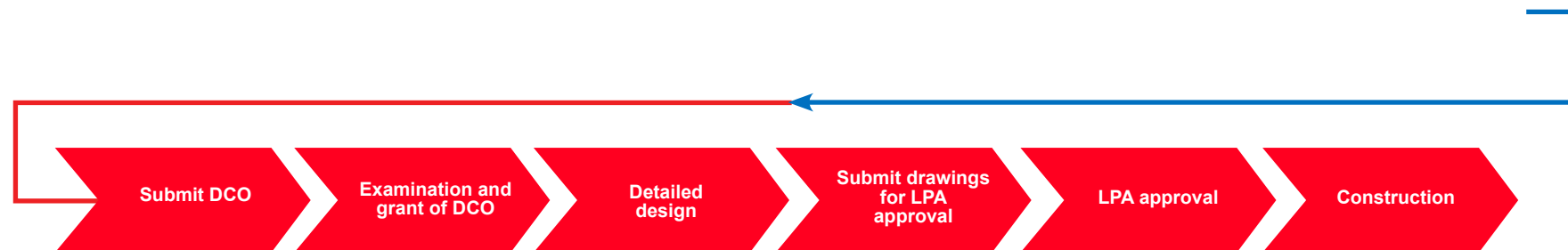
National policy for national infrastructure project provides advice on the concept of 'good design'. In summary it recognises that many types of energy infrastructure are limited in their design options by their inherent nature and characteristics and that 'good design' also extends beyond the aesthetic to include sustainable design, adaptability and durability, functionality and fitness for purpose. Recent guidance provided by the National Infrastructure Commission Design Group includes the principles of greenhouse gas mitigation and adaptation, the provision of what society wants, a sense of identity and environmental improvement and the achievement of multiple benefits.

This Design and Access Statement demonstrates that the above guidance and principles have been considered and have informed all aspects of site selection including site access and future access requirements as well as the way in which the design of the EfW CHP Facility has evolved to produce that which is submitted as part of the application.

The EfW CHP Facility would be sustainable, its purpose is to reduce the amount of waste currently landfilled, extract energy from the waste it receives and to use this to heat or power local businesses thereby reducing greenhouse gas emissions. In its architecture and layout however additional sustainability measures are provided such that it has the potential to facilitate additional economic activity through the reopening of New Bridge Lane to a design consistent with the Wisbech Access Strategy, provides ecological benefit

through building design and a landscape scheme which maximises habitat creation and provides social benefit through the education opportunities afforded by the proposals for the administration building. Furthermore, the EfW CHP Facility demonstrates adaptability and durability, reserving land for a future road bridge, land for carbon capture and for a railway offloading area. It is also adaptable to future climate change having been designed to accommodate future flooding events and to respond to higher temperatures and fluctuations in rainfall via sustainable urban drainage systems, rainwater harvesting to the administration building and the provision of natural cooling and ventilation within the administration building. The EfW CHP Facility is functional and fit for purposes with a site and buildings designed to accommodate a modern, efficient energy from waste facility served by a primary access located the shortest distance from the strategic road network, avoiding therefore the need for HGVs to travel through Wisbech on the local highways. Taking into account comments on the design that have been raised at both non statutory and statutory consultation, greater architectural consideration has been given to the finishing materials and appearance of the main boiler house, through a commitment to BREEAM 'good' and 'excellent' and the provision of opportunities to create a sense of identity.

The final design will be approved post consent, and the design as proposed, provides a framework for the final design to be developed within the parameters described.





Appendix A

Design principles

The following design principles have been established for the EfW CHP Facility, administration building and Walsoken Substation: EfW CHP Facility (excluding administration building).

EfW CHP Facility

- Cladding colours and type will be designed to create cohesion across the various building elements.
- A three coloured banding approach will be followed, using shades of grey that respond to the surrounding buildings on the industrial estate.
- The three banded cladding approach will be designed to minimise the overall visual bulk of the buildings.
- Lower-level building elevations will be darker grey to create the effect of a unifying plinth throughout the site.
- Above the lower-level building elevations, there will be a gradation through a mid-grey for medium level building elevations to a light grey for the boiler house building.
- The detailed design of the EfW CHP Facility will consider the use of kinetic cladding to create additional visual interest on the higher parts of the EfW CHP Facility, most notably the boiler house building.
- Openings in the elevations of the EfW CHP Facility will be the minimum necessary to enable the proper function of the EfW CHP Facility.
- Roof-mounted equipment will be minimised to that which is necessary for the proper function of the EfW CHP Facility and no equipment will extend beyond the maximum LoD relevant to that part of the Facility.
- The EfW CHP Facility will achieve a BREEAM score of 'good' as a minimum.
- The EfW CHP Facility building cladding will achieve a BRE Green Guide A+ Rating.
- No advertisements will be placed on the EfW CHP Facility buildings. Signage will be consistent with the architectural context and appear uniform in terms of material, colour and geometry using the agreed colour palette and/or Applicant's corporate colours only.



Administration building

- The administration building will achieve a BREEAM score of 'Excellent' as a minimum.
- The administration building design, orientation and glazing will allow solar gain during the winter months, with solar shading preventing overheating during the summer months.
- The administration building fabric will be highly insulated and air tight to reduce reliance on heating.
- The landscape design specific to the administration building will provide ecological habitats and contribute towards rainwater attenuation through SUDS features. Ecological habitats will include the provision of a brown roof on part of the building and sections of green walls to appropriate elevations.
- The proposed cladding on the administration building could be hardwood timber with a clear finish to reduce maintenance and keep consistent colour and appearance, or alternatively, brick, render or other cladding materials. The chosen cladding materials will achieve a BRE Green Guide A+ material rating as defined in the BRE guides.
- The administration building roof will accommodate solar photo voltaic panels and a viewing area for visitors. Energy use will be reduced through the use of LED lighting and a commitment to use energy efficient appliances.
- Rainwater harvesting is proposed in the administration building, with low flow taps, showers, and dual flush WCs surface water run-off surrounding the administration building will be collected within underground attenuation tank(s).
- The administration building will have a dedicated visitor area which shall be equipped to accommodate educational visits.

Walsoken substation

- The substation will incorporate clean air switchgear.
- The kiosk will be GRP and coloured dark green.

